Service Manual

LCD Monitor Acer X193HQ

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Appendix : User's manual

Acer X193HQ Service Manual

Important Safety Notice

1. Safety precautions

This monitor is manufactured and tested on a ground principle that a user's safety comes first. However, improper used or installation may cause damage to the monitor as well as to the user.

Warning:

- This monitor should be operated only at the correct power sources indicated on the label on the rear of the monitor. If you're unsure of the power supply in you residence, consult your local dealer or Power Company.
- Do not try to repair the monitor by yourself, as it contains no user-serviceable parts. This monitor should only be repaired by a qualified technician.
- Do not remove the monitor cabinet. There are high-voltage parts inside that may cause electric shock to human bodies.
- Stop using the monitor if the cabinet is damaged. Have it checked by a service technician.
- Put your monitor only in a lean, cool, dry environment. If it gets wet, unplug the power cable immediately and consult your closed dealer.
- Always unplug the monitor before cleaning it. Clean the cabinet with a clean, dry cloth. Apply non-ammonia based cleaner onto the cloth, not directly onto the class screen.
- Do not place heavy objects on the monitor or power cord.

2. Product safety notice

Many electrical and mechanical parts in this chassis have special safety visual inspections and the protection afforded by them cannot necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Before replacing any of these components read the parts list in this manual carefully. The use of substitute replacement parts, which do not have the same safety characteristics as specified in the parts list, may create shock, fire, or other hazards.

3. Service notes

- When replacing parts or circuit boards, clamp the lead wires around terminals before soldering.
- Keep wires away from high voltage, high temperature components and sharp edges.
- Keep wires in their original position so as to reduce interference.
- Adjustment of this product please refers to the user' manual.

01 Product Specification

1. General:

Acer X193HQ is designed with LVDS interface and dual (analog and digital signal) input, it featured with embedded universal AC power supplies and audio input. It's a green product and meets all ROHS standard. The power button and display control buttons are on the front of the monitor. The monitors shall automatically to display lower resolution video modes into 1366x768 full screen display. The image can be adjusted through OSD control.

1.1 Main Features

Features		Specifications
Panel source		M185XW01-V0
Maximum resolution		1366x768 @ 60Hz
Back light system		2 CCFL
Actual Resolution display		WXGA(1366x768)
Pixel pitch		0.3(H) x 0.3(V)
Display area		409.8 (H) x230.4 (V) , 18.5" diagonal
Contrast ratio		10000:1(ACM ON)
Response time (Tr+Tf)		5ms (typ.)
Viewing angle		85˚(L)/ 85˚(R), 80˚(U)/80˚(D) typ. CR>=10)
Input interface		Analog(D-sub 15 pin) Digita(DVI-D connector)----option
Audio system		≧ 1 W + 1 W
Power management		Compatible with VESA,EPA,NUTEK,DPMS
Plug & Play		VESA
University AC power supply		YES
OSD language	For Non-EMEA	English, Deutsch, Español, 简体中文, 繁體中文, Français, Italiano, 日本語
	For EMEA	English, Deutsch, Español, Dutch, Russian, Français, Italiano, Finnish

1.2 Accessories

Items	VGA cable	DVI cable	Audio cable	User's manual	Warranty card	Quick-start Guide
Description	1.8m	1.8m	1.8m	Multi	Multi	Multi
	●	●	●	●	●	●

2. Operation Specifications

The unit should suffer no visible cosmetic damage and should operate with no degradation in display quality during exposure to the operating conditions and after exposure to the non-operating conditions, in any sequence.

2.1 Environmental conditions

Operating	Specification
Temperature range	5°C to 40°C
Relative humidity	20% to 80%
Altitude	0 to 3657M (12000 ft)
Storage	

Temperature range	**-20°C to 60°C**
Relative humidity	**5% to 80%**
Altitude	**0 to 12191M (40000 ft)**

2.2 Safety, EMC, Ergonomics and Compatibility Requirements

Items	Description						
Safety	UL/cUL	CB	TUV/GS	CCC	BSMI		Other
	●	●	●	●	●		
EMC	FCC-B	CE/EMC	CCC	VCCI	C-Tick	BSMI	
	●	●	●	●	●	●	
Ergonomics	TCO99	TCO03	Nemko/Erg				
		●	●				
Compatibility	Windows 95/98/Me		Windows 2000		Windows XP		Vista
	●		●		●		●
Power Management	Energy Star						
	●						

2.3 Electrostatic Discharge Requirements

Item	Condition	Spec	
Electrostatic Discharge	**IEC61000-4-2(EN55024)**	**Contact discharge : ±4KV**	
		Contact discharge : ±8KV	●
		Air discharge : ±8KV	
		Air discharge : ±15KV	●

2.4 Reliability

Items	Condition	Spec	Note
MTBF	**Operating condition is 40°C**	**≧ 50,000 Hours**	**Excluding the LCD, CCFL**
CCFL Life time	**Luminance becomes 50%**	**≧ 40,000 Hours(min)**	**Note1**

Note1. Display an all WHITE field at mid Brightness and Contrast settings.

3. Electrical and Optical Characteristics and Performance

3.1 Main Power Supply

Items	Condition	Spec	Note
AC Input Voltage Range	**Universal input full range**	**100~240VAC /50~60Hz**	
AC Input Current	**100Vac** **240Vac**	**1.2A(max)** **0.6A(max)**	
AC Frequency Range	**100Vac** **240Vac**	**50Hz – 60Hz**	
Inrush Current	**120Vac,cold star,0°C** **240Vac,cold star,0°C**	**30A (max)** **60A(max)**	
Regulator Efficiency	**DC output full loading**	**≥75%**	
Ripple and Noise	**+14.2V output**	**<400mv**	
	+5.2Vcc output	**<150mv**	**Note4**

	+5.2V audio output	<200mv	
DC Output Voltage and Current	VCC14.2V(13.5~16.3V); VCC5.2V(4.95~5.45V); Audio VCC5.2V(4.95~5.45V)	0.8A(typ.),1.0A(max) 0.8A(typ.),1.0A(max) 0.5A(typ.),0.6A(max)	
Power consumption	with Audio	≤25W	
Protection			See Table-1
Power management			See Table-2

Note2. Before each test, the buck capacitor need to be discharged.
Before each test, it must be 10 minutes at least after the latest test.

Note4. ested by DC loading side parallel with a 47uF/EC and 0.1uF/Ceramic , Capacitors and measured band-width with DC-20MHz, the sine wave signal that the frequency is 1K Hz input when testing the ripple for the 5V of audio.

Table-1

Protection	Condition	Spec
OPP(Over power protection)	nominal AC input	32W (min)

Table-2

Status	H-sync	V-sync	Video	Power	LED
Power On	on	on	active	□ 25W	Blue
Power Saving	off	on	blanked	< 2W	Amber
	on	off	blanked	< 2W	Amber
	off	off	blanked	< 2W	Amber
Power Off	--	--	--	< 1W	Off

3.2 Backlight Power Supply

Panel: **AUO M190PW01 V0**

Items	Specification
Lamp	2 CCFL
Input Voltage	13.5V~ 16.3 V
Input current	0.8A (Typ.), 1.0A (Max.)
On/Off switch level	5.5V≧Von≧ 2.0 V (on) -0.3v ≤ Voff ≤ 0.8 V (off)
Brightness PWM duty	Extra PWM duty:18%~100%(DCR);35%~100%(CR); PWM:High=3.3V(3.0~3.30V),Low=0.0V
CCFL operating Voltage	734Vrms (Typ.),
CCFL Current	DCR:1.6 mA (min.); CR:3.0 mA (min)
	7.5mA (Typ.)
	8.0mA (Max.)
CCFL startup voltage	≧1700 Vrms (0˚C)
Operating frequency	40~80 KHz
Protect delay time	> 1 second
Lamp	2 CCFL

3.3 Brightness output

The test to verify specifications in this section shall be performed under the following standard conditions unless otherwise noted.

Temperature	: 25 ± 5°C
Test pattern	: white
Video Resolution	: 1366 x 768
Video input level	: 700 mV ± 2%
Warm-up time	: 30 minutes

LCD Module	BL
M185XW01-V0	□250 cd/m^2

Set brightness control and also contrast control at maximum, to measure the screen center, the light output shall ≥ BL cd/m^2 (as panel spec)

3.4 White balance

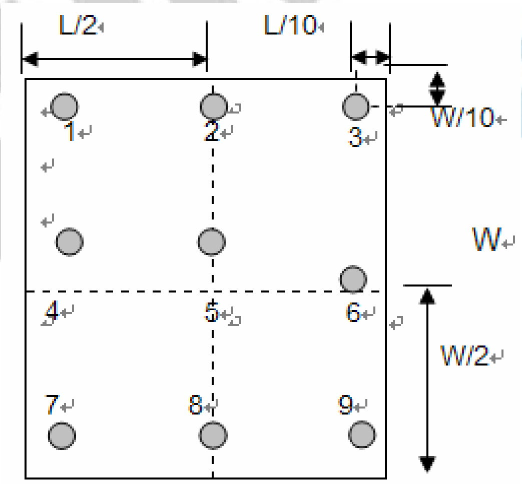
Mode		Chromaticity Coordinate	
		x	y
Cool	9300K	0.283 ± 0.030	0.297 ± 0.030
Warm	6500K	0.313 ± 0.030	0.329 ± 0.030
User		Panel While x	Panel While y

The test standard conditions refer to Sec 3.3. (Brightness and contrast are under default value)

3.5 Brightness uniformity

The test standard conditions refer to Sec 3.3.

$$\frac{\text{Min. luminance of nine points (backlight)}}{\text{Max. luminance of nine points (backlight)}} \geqq 75\%$$



4. Input / Output Signal Specifications

4.1 Video signals

Items	Condition	Specification
Analog RGB signal	Input impedance =75 Ohm	0.7Vp-p
Sync	Input impedance ≧ 1k Ohm	TTL level, Separate H/V-sync(+/-)

4.2 Signal Timing

Acer –LCD-X193HQ

Through D-SUB/DVI connectors, this unit can support F_H= 31~80 KHz, Fv=55~76Hz, Modes details as below:

Mode	Resolution (active dot)	Resolution (total dot)	Horizontal Frequency (KHz)	Vertical Frequency (Hz)	Nominal Pixel Clock (MHz)
	640x480@60Hz	800 x 525	31.469	59.941	25.175
	640x480@72Hz	832 x 520	37.861	72.809	31.500
	640x480@75Hz	840 x 500	37.500	75.000	31.500
MAC	640x480@66.66Hz	864x525	35	66.66	30.24
VESA	720x400@70Hz	900x449	31.469	70.087	28.322
SVGA	800x600@56Hz	1024 x 625	35.156	56.250	36.000
	800x600@60Hz	1056 x 628	37.879	60.317	40.000
	800x600@72Hz	1040 x 666	48.077	72.188	50.000
	800x600@75Hz	1056x625	46.875	75.000	49.500
MAC	832x624@74.55Hz	1152x667	49.722	74.55	57.28
XGA	1024x768@60Hz	1344x806	48.363	60.004	65.000
	1024x768@70Hz	1328x806	56.476	70.069	75.000
	1024x768@75Hz	1312x800	60.023	75.029	78.750
MAC	1152x870@75Hz	1568x909	68.700	75.000	84.520
VESA	1152x864@75Hz	1600x900	67.5	75	108
	1280x960@60Hz	1800x1000	60	60	108
SXGA	1280x1024@60Hz	1688x1066	63.981	60.020	108.000
	1280x1024@75Hz	1688x1066	79.976	75.025	135.000
VESA	1280x720@60Hz	1650x750	44.955	59.940	74.176
WXGA	1280x800@60Hz	1680x831	49.702	59.810	83.500
	1366x768@60Hz	1792x798	47.712	59.790	85.500

Note:
1. Non-interlace signals only (An interlace signal cannot be display)
2. Please refer to F/W specification for more detail
3. Each frequency of Power Macintosh and Sun Ultra is a reference value

4.2.1 Digital signals

TMDS Signal: (min) ±200mVpp@24Bit

4.3 Timing requirements

Scan Frequency	Condition	Specification
Horizontal	Sync polarity: (+) or (-)	31 ~ 80 KHz.
Vertical	Sync polarity: (+) or (-)	55-76Hz
Out of range	Excluding Horizontal 31~80 KHz or Vertical 55-76 Hz	Message “Input Not Supported” on screen

4.4 DDC data

4.4.1 EDID Standard Compliance

EDID File Format : VESA’s EDID Standard Version1.0, Revision 12,

EDID Structure : Version #1, Revision #3.

EDID Data Table : See the attached table (for example)

X193HQ VGA EDID table

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	00	FF	FF	FF	FF	FF	FF	00	04	72	67	00	00	00	00	00
1	00	00	01	03	08	29	17	78	EA	3D	85	A6	56	4A	9A	24
2	12	50	54	BF	EF	90	81	C0	81	00	81	80	81	40	71	4F
3	01	01	01	01	01	01	66	21	56	AA	51	00	1E	30	46	8F

4	33	00	9A	E6	10	00	00	1C	00	00	00	FF	00	30	30	30
5	30	30	30	30	30	30	30	30	30	0A	00	00	00	FD	00	37
6	4C	1F	50	0E	00	0A	20	20	20	20	20	20	00	00	00	FC
7	00	58	31	39	33	48	51	0A	20	20	20	20	20	20	00	39

X193HQ DVI EDID table

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	00	FF	FF	FF	FF	FF	FF	00	04	72	67	00	00	00	00	00
1	00	00	01	03	80	29	17	78	EA	3D	85	A6	56	4A	9A	24
2	12	50	54	BF	EF	90	81	C0	81	00	81	80	81	40	71	4F
3	01	01	01	01	01	01	66	21	56	AA	51	00	1E	30	46	8F
4	33	00	9A	E6	10	00	00	1C	00	00	00	FF	00	30	30	30
5	30	30	30	30	30	30	30	30	30	0A	00	00	00	FD	00	37
6	4C	1F	50	0E	00	0A	20	20	20	20	20	20	00	00	00	FC
7	00	58	31	39	33	48	51	0A	20	20	20	20	20	20	00	C1

X183H VGA EDID table

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	00	FF	FF	FF	FF	FF	FF	00	04	72	68	00	00	00	00	00
1	00	00	01	03	08	29	17	78	EA	3D	85	A6	56	4A	9A	24
2	12	50	54	BF	EF	90	81	C0	81	00	81	80	81	40	71	4F
3	01	01	01	01	01	01	66	21	56	AA	51	00	1E	30	46	8F
4	33	00	9A	E6	10	00	00	1C	00	00	00	FF	00	30	30	30
5	30	30	30	30	30	30	30	30	30	0A	00	00	00	FD	00	37
6	4C	1F	50	0E	00	0A	20	20	20	20	20	20	00	00	00	FC
7	00	58	31	38	33	48	0A	20	20	20	20	20	20	20	00	6A

X183H VGA EDID table

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	00	FF	FF	FF	FF	FF	FF	00	04	72	68	00	00	00	00	00
1	00	00	01	03	80	29	17	78	EA	3D	85	A6	56	4A	9A	24
2	12	50	54	BF	EF	90	81	C0	81	00	81	80	81	40	71	4F
3	01	01	01	01	01	01	66	21	56	AA	51	00	1E	30	46	8F
4	33	00	9A	E6	10	00	00	1C	00	00	00	FF	00	30	30	30
5	30	30	30	30	30	30	30	30	30	0A	00	00	00	FD	00	37
6	4C	1F	50	0E	00	0A	20	20	20	20	20	20	00	00	00	FC
7	00	58	31	38	33	48	0A	20	20	20	20	20	20	20	00	6A

4.5 Audio signal

Items	Specification
Input impedance	≧ 10K ohm
Frequency response range	200Hz – 20kHz
Signal to noise ratio	≧ 40 dB
Output power	≧ 1.0 W + 1.0 W (10%THD)

5. Function Specifications

All the tests to verify specifications in this section shall be performed under the following standard conditions unless otherwise noted. The standard conditions are:

Temperature : 25 ± 5°C
Warm-up time : 30 minutes minimum
Checking display modes : All the specified modes

5.1 Panel general specifications

5.1.1 General specifications

Supplier	AUO
Model name	M185XW01-V0
Display Area	409.8 (H) x230.4 (V) , 18.5" diagonal
Pixel Pitch	0.3(H) x 0.3(V)
Display Colors:	16.7 Million (RGB 6-bit + HiFRC)
Number of Pixel	1366x768 pixels
Pixel Arrangement	RGB vertical stripe
Brightness	300cd/m^2 (Typ.) 250cd/m^2 (Min.)
Contrast Ratio	1000:1 Typical
Viewing Angle	85˚(L)/ 85˚(R), 80˚(U)/80˚(D) typ. CR>=10)
Display Mode	Normally White
Frame rate	60Hz
Response Time	Tr + Tf = 5ms Typical
Surface Treatment	Anti-glare, Haze = 25%, Hard coating (3H)
Lamp	2 CCFL
Outline Dimension	430.37(W)x254.6(H)x16.5(D) Typ

5.1.2 LCD module defects

LCD module defects check follow to the IIS.

5.2 Keypad Function

5.2.1 Control buttons on the front bezel

CONTROL KEY	KEYS FUNCTION
[AUTO]	A. When OSD un-displays, press [AUTO] to perform auto-adjustment B. When OSD displays, press [AUTO] to return to previous level menu C. When "e Color OSD" OSD displays, press [AUTO] to exit the OSD

[MENU]	A. When OSD isn't shown on screen, press [MENU] to enter OSD interface. The OSD interface uses "ACER e Color Management" and "User" to instead "Contrast" and "Brightness" separately. When press "ACER e Color Management" to show "e Color OSD", and press "User" to show OSD interface before. The translations of "ACER e Color Management" and "User" are always English. B. When OSD displays, press [MENU] to perform function of menu icon that is highlight or enter next level menu
[►], [◄]	A. When "MENU OSD" displays, press these keys to change the contents of an adjustment item, or change an adjustment value B. When "MENU OSD" un-displays, if it is with audio, press [►] to show "Audio" OSD and increase the volume, press [◄] to show "Audio" OSD and decrease the volume; else it has no use to press these keys.
[e Color]	A. When OSD un-displays, press [e Color] to show "e Color OSD", and press again the OSD can not disappear, but the time of "e Color OSD" disappearing is reset 10 second again. B. When OSD disappear not including "e Color OSD", press [e Color] to show "e Color OSD" OSD, the OSD before disappears, but the parameters of it should be saved
[POWER]	Power on or power off the monitor

5.2.2 **Hot Key Operation**

FUNCTION	HOT KEY OPERATION						
	AUTO	e Color	◄	►	MENU	POWER	
FACTORY MODE		●			●	ON	Press [e Color] & [MENU] at the same time, and then press [POWER] for DC power on. OSD menu will be shown with "F" on the left top. Select "F" for entering factory mode.

5.3 OSD Structure

The On-Screen Display (OSD) shall be an easy to use icon based menu through keypad OSD buttons or remote control unit. The unit shall leave the factory with all OSD controls set to their default values.

First	Second	Third	Control Range	Default Value	
Brightness	ACER eColor Management	empowering Technology	---	Standard mode	
	User	Contrast	0 ~ 100	User mode	50
				Text mode	50
				Standard mode	50
				Graphics mode	60
				Movie mode	56

		Brightness	0 ~ 100	User mode	77
				Text mode	44
				Standard	77
				Graphics	97
				Movie mode	77
		ACM		OFF	
Image	Focus	---	0 ~ 100	Depend on each timing	
	Clock	---	0 ~ 100	50 ①	
Position	H. Position	---	0 ~ 100	50	
	V. Position	---	0 ~ 100	Depend on each timing	
Color	Warm (6500K)	---	---		
	Cool (9300K)	---	---		
	User	Red	0 ~ 100	80	
		Green	0 ~ 100	80	
		Blue	0 ~ 100	80	

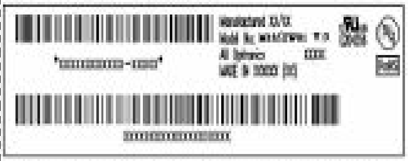
02. Flat Panel Specification

1.0 Handling Precautions

1) Since front polarizer is easily damaged, pay attention not to scratch it.
2) Be sure to turn off power supply when inserting or disconnecting from input connector.
3) Wipe off water drop immediately. Long contact with water may cause discoloration or spots.
4) When the panel surface is soiled, wipe it with absorbent cotton or other soft cloth.
5) Since the panel is made of glass, it may break or crack if dropped or bumped on hard surface.
6) Since CMOS LSI is used in this module, take care of static electricity and insure human earth when handling.
7) Do not open or modify the Module Assembly.
8) Do not press the reflector sheet at the back of the module to any directions.
9) In case if a Module has to be put back into the packing container slot after once it was taken out from the container, do not press the center of the CCFL reflector edge. Instead, press at the far ends of the CCFL Reflector edge softly. Otherwise the TFT Module may be damaged.
10) At the insertion or removal of the Signal Interface Connector, be sure not to rotate nor tilt the Interface Connector of the TFT Module.
11) After installation of the TFT Module into an enclosure, do not twist nor bend the TFT Module even momentary. At designing the enclosure, it should be taken into consideration that no bending/twisting forces are applied to the TFT Module from outside. Otherwise the TFT Module may be damaged.
12) Cold cathode fluorescent lamp in LCD contains a small amount of mercury. Please follow local ordinances or regulations for disposal.
13) Small amount of materials having no flammability grade is used in the LCD module. The LCD module should be supplied by power complied with requirements of Limited Power Source (IEC60950 or UL1950), or be applied exemption.
14) The LCD module is designed so that the CCFL in it is supplied by Limited Current Circuit (IEC60950 or UL1950). Do not connect the CCFL in Hazardous Voltage Circuit.

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	21	6.4.1 Timing Characteristics [illegible]	[illegible]	
	24	7.1 TFT LCD Module Connector Name / Designation: Interface Connector / Interface card Type Part Number: [illegible] (STM)	Connector Name / Designation: Interface Connector / Interface card Type Part Number: [illegible]	
	25	7.2 Backlight Unit Connector Name / Designation: Lamp Connector / Backlight lamp Manufacturer: CVILUX or YEON HO Type Part Number: [illegible] Mating Type Part Number: [illegible]	Connector Name / Designation: Lamp Connector / Backlight lamp Manufacturer: YEON HO Type Part Number: 35001HS-02L Mating Type Part Number: 35001WR-02LP	
	27	9.0 Shipping Label 		
	28,29	2D drawing –PCBA	2D drawing –change PCBA size	

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4) When the panel surface is soiled, wipe it with absorbent cotton or other soft cloth.
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6) Since CMOS LSI is used in this module, take care of static electricity and insure human earth when handling.
7) Do not open or modify the Module Assembly.
8) Do not press the reflector sheet at the back of the module to any directions.
9) In case if a Module has to be put back into the packing container slot after once it was taken out from the container, do not press the center of the CCFL reflector edge. Instead, press at the far ends of the CCFL Reflector edge softly. Otherwise the TFT Module may be damaged.
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Product Specification M185XW01 V0
AU OPTRONICS CORPORATION

2.0 General Description

This specification applies to the 18.5 inch-wide Color a-Si TFT-LCD Module M185XW01.The display supports the WXGA - 1366(H) x 768(V) screen format and 16.7M colors (RGB 6-bits + Hi-FRC data). All input signals are 1-channel LVDS interface and this module doesn't contain an inverter board for backlight.

2.1 Display Characteristics

The following items are characteristics summary on the table under 25℃ condition:

ITEMS	Unit	SPECIFICATIONS
Screen Diagonal	[mm]	470.1(18.51")
Active Area	[mm]	409.8 (H) x 230.4 (V)
Pixels H x V		1366(x3) x 768
Pixel Pitch	[um]	300 (per one triad) × 300
Pixel Arrangement		R.G.B. Vertical Stripe
Display Mode		TN Mode, Normally White
White Luminance (Center)	[cd/m²]	300 cd/m²(@ 7.5mA (Typ.)
Contrast Ratio		1000 (Typ.)
Optical Response Time	[msec]	5ms (Typ., on/off)
Nominal Input Voltage VDD	[Volt]	+5.0 V (Typ)
Power Consumption (VDD line + CCFL line)	[Watt]	17 W (Typ.) (without inverter, all black pattern)
Weight	[Grams]	2000 (Max)
Physical Size	[mm]	430.37 (W) x 254.6 (H) Typ. x 16.5 (D) Max
Electrical Interface		One channel LVDS
Support Color		16.7M colors (RGB 6-bit + Hi_FRC)
Surface Treatment		Anti-Glare, 3H
Temperature Range		
Operating	[°C]	0 to +50
Storage (Shipping)	[°C]	-20 to +60
RoHS Compliance		RoHS Compliance

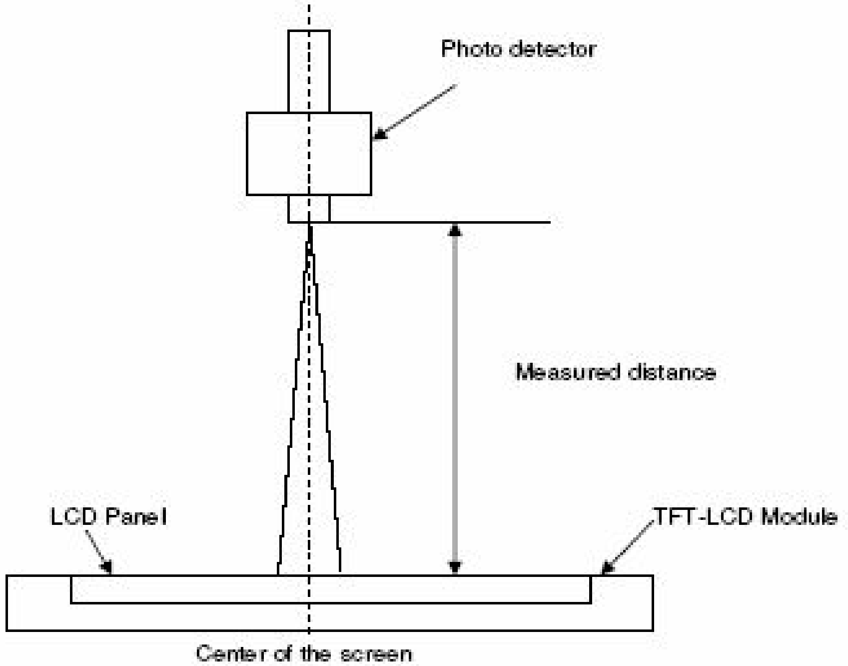
2.2 Optical Characteristics

The optical characteristics are measured under stable conditions at 25℃:

Item	Unit	Conditions	Min.	Typ.	Max.	Note
Viewing Angle	[degree]	Horizontal (Right) CR = 10 (Left)	150	170	- -	2
		Vertical (Up) CR = 10 (Down)	140	160	- -	
Contrast ratio		Normal Direction	600	1000	-	3
Response Time	[msec]	Raising Time (T_{rR})	-	3.6	5.7	4
		Falling Time (T_{rF})	-	1.4	2.3	
		Raising + Falling	-	5	8	
Color / Chromaticity Coordinates (CIE)		Red x	0.618	0.648	0.678	5
		Red y	0.309	0.339	0.369	
		Green x	0.262	0.292	0.322	
		Green y	0.573	0.603	0.633	
		Blue x	0.113	0.143	0.173	
		Blue y	0.040	0.070	0.100	
Color Coordinates (CIE) White		White x	0.283	0.313	0.343	
		White y	0.299	0.329	0.359	
Central Luminance	[cd/m^2]		240	300	-	6
Luminance Uniformity	[%]		75	80	-	7
Crosstalk (in 60Hz)	[%]				1.5	8
Flicker	dB				-20	9

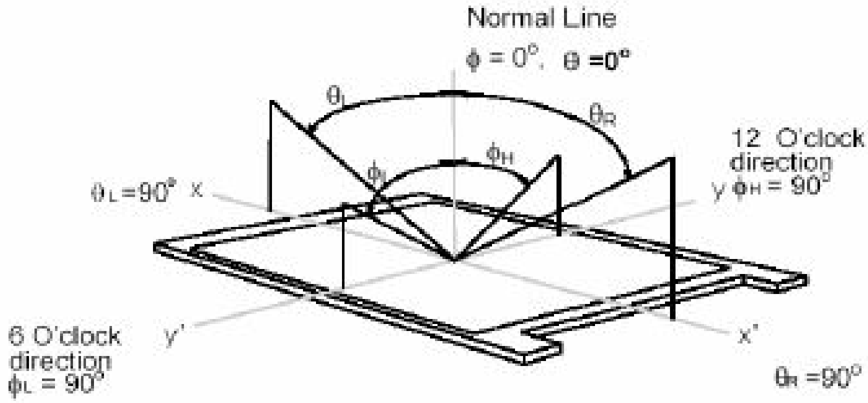
Note 1: **Measurement method**

The LCD module should be stabilized at given temperature for 30 minutes to avoid abrupt temperature change during measuring (at surface 35□). In order to stabilize the luminance, the measurement should be executed after lighting Backlight for 30 minutes in a stable, windless and dark room.



Note 2: **Definition of viewing angle** measured by ELDIM (EZContrast 88)

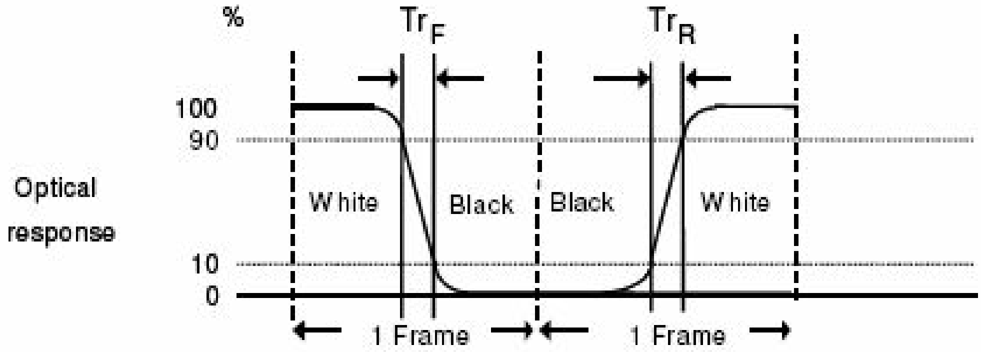
Viewing angle is the measurement of contrast ratio ≧10, at the screen center, over a 180° horizontal and 180° vertical range (off-normal viewing angles). The 180° viewing angle range is broken down as follows; 90° (θ) horizontal left and right and 90° (Φ) vertical, high (up) and low (down). The measurement direction is typically perpendicular to the display surface with the screen rotated about its center to develop the desired measurement viewing angle.



Note 3: **Contrast ratio is** measured by TOPCON SR-3

Note 4: **Definition of Response time** measured by Westar TRD-100A

The output signals of photo detector are measured when the input signals are changed from "Full Black" to "Full White" (rising time, Tr_R), and from "Full White" to "Full Black" (falling time, Tf_F), respectively. The response time is interval between the 10% and 90% (1 frame at 60 Hz) of amplitudes.

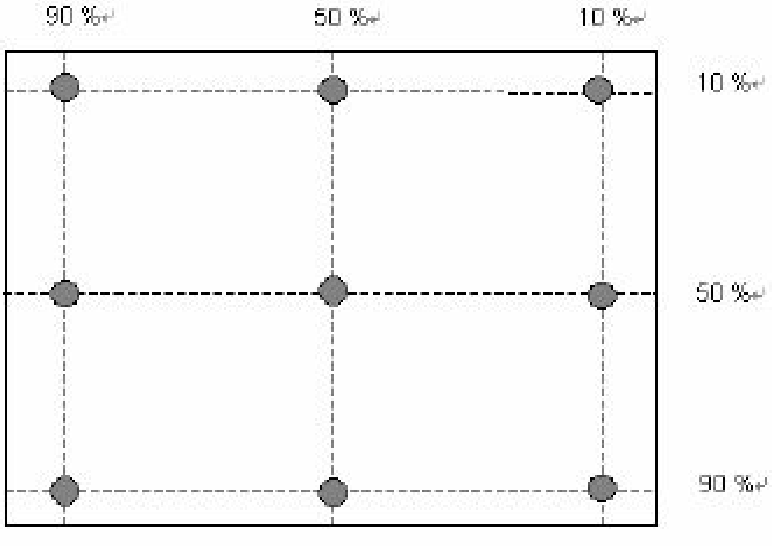


$Tr_R + Tf_F$ = 5 msec (typ.).

Note 5: **Color chromaticity and coordinates (CIE) is** measured by TOPCON SR-3

Note 6: **Central luminance is** measured by TOPCON SR-3

Note 7: **Luminance uniformity of these 9 points is defined as below and** measured by TOPCON SR-3



$$\text{Uniformity} = \frac{\text{Minimum Luminance in 9 points (1-9)}}{\text{Maximum Luminance in 9 Points (1-9)}}$$

Note 8: **Crosstalk is defined as below and** measured by TOPCON SR-3

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CT = | YB – YA | / YA × 100 (%)

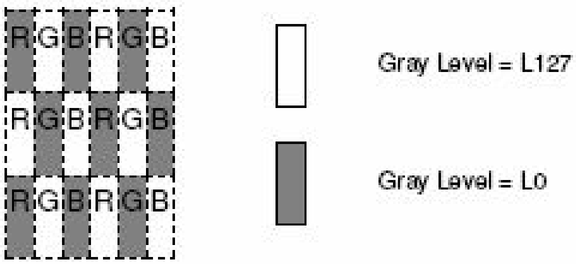
Where

YA = Luminance of measured location without gray level 0 pattern (cd/m2)

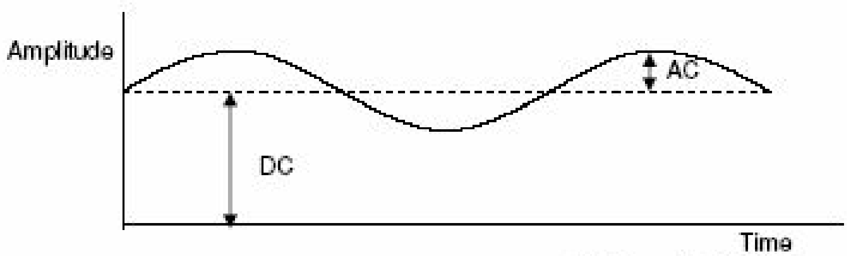
YB = Luminance of measured location with gray level 0 pattern (cd/m2)



Note 9: **Test Patern: Subchecker Pattern** measured by TOPCON SR-3



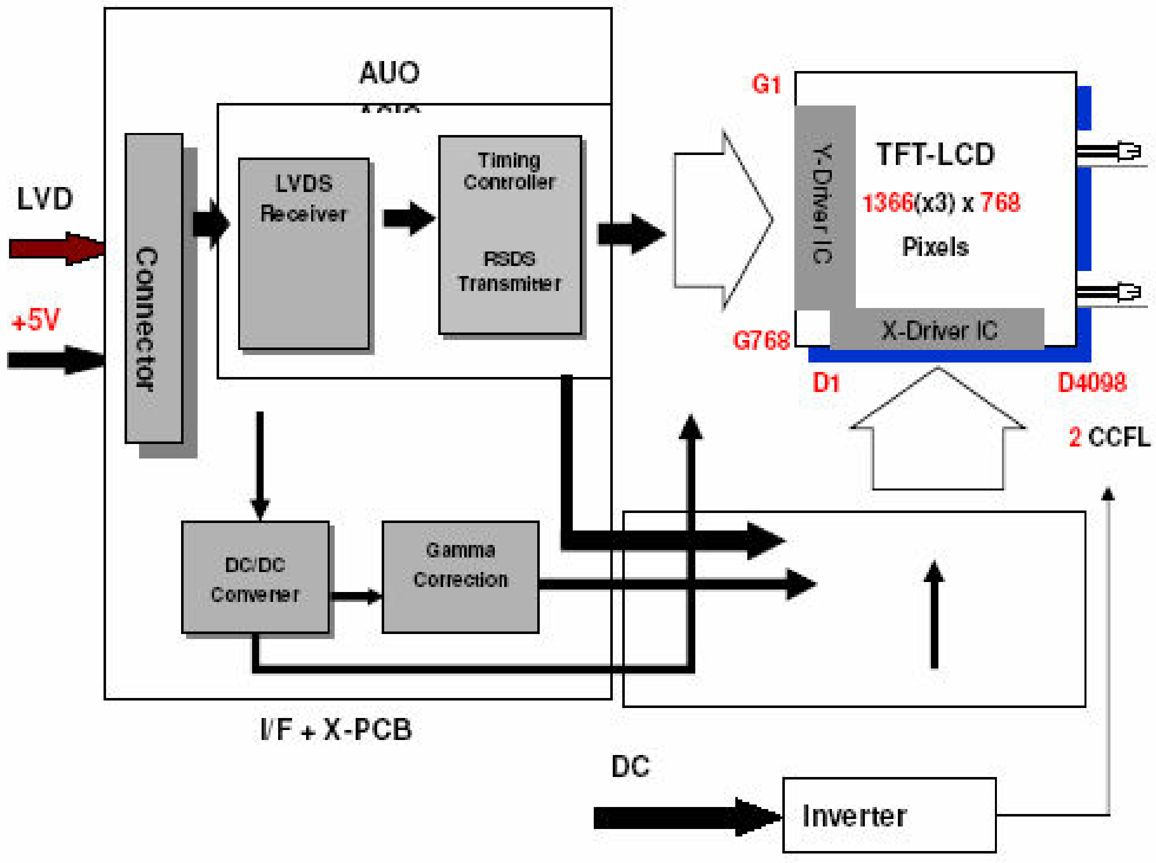
Method: Record dBV & DC value with TRD-100



$$\text{Flicker (dB)} = 20\log\frac{\text{AC Level(at 30 Hz)}}{\text{DC Level}}$$

3.0 Functional Block Diagram

The following diagram shows the functional block of the 18.5 inch Color TFT-LCD Module:



I/F PCB Interface:

FI-XB30SSRL-HF16(JAE)/MSCKT2407P30HB(信盛)

Mating Type:

FI-X30HL (JAE)(Locked Type)

4.0 Absolute Maximum Ratings

Absolute maximum ratings of the module are as following:

4.1 TFT LCD Module

Item	Symbol	Min	Max	Unit	Conditions
Logic/LCD Drive Voltage	VDD	4.5	+5.5	[Volt]	*Note 1,2*

4.2 Backlight Unit

Item	Symbol	Min	Max	Unit	Conditions
CCFL Current	ICFL	3.0	8	[mA] rms	*Note 1,2*

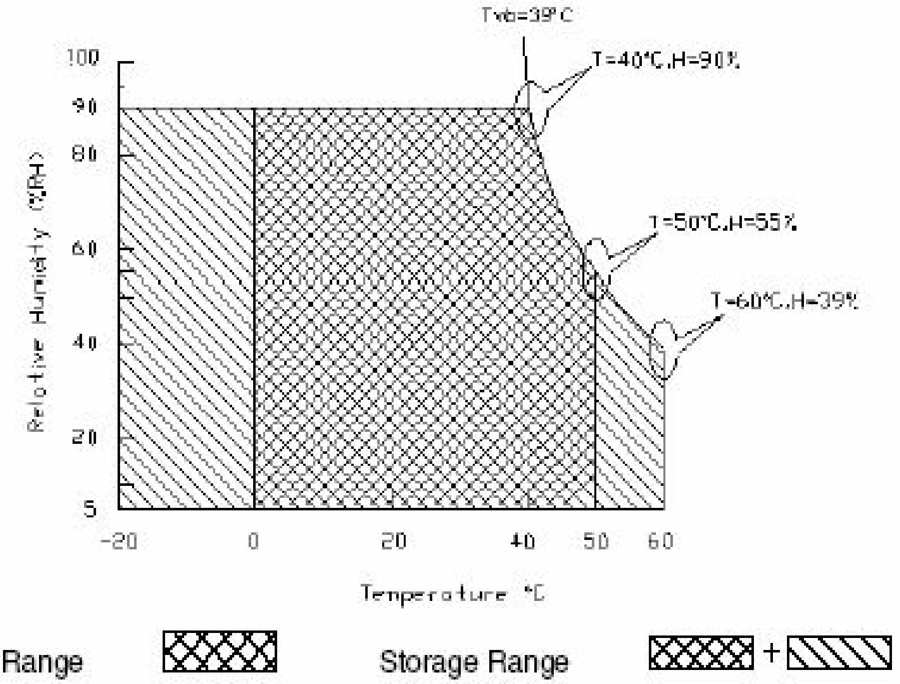
4.3 Absolute Ratings of Environment

Item	Symbol	Min.	Max.	Unit	Conditions
Operating Temperature	TOP	0	+50	[°C]	*Note 3*
Operation Humidity	HOP	5	90	[%RH]	
Storage Temperature	TST	-20	+60	[°C]	
Storage Humidity	HST	5	90	[%RH]	

Note 1: With in Ta (25℃)

Note 2: Permanent damage to the device may occur if exceeding maximum values

Note 3: For quality perfermance, please refer to AUO IIS(Incoming Inspection Standard).



5.0 Electrical characteristics

5.1 TFT LCD Module

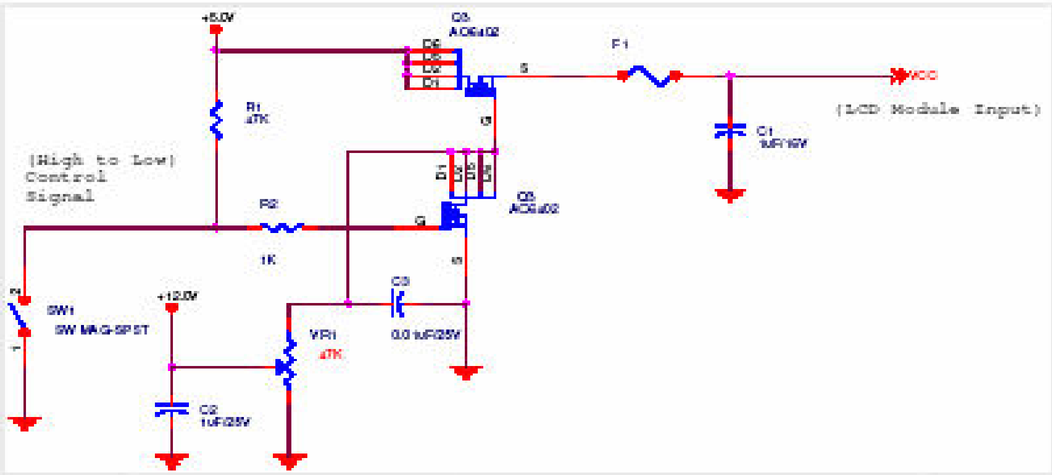
5.1.1 Power Specification

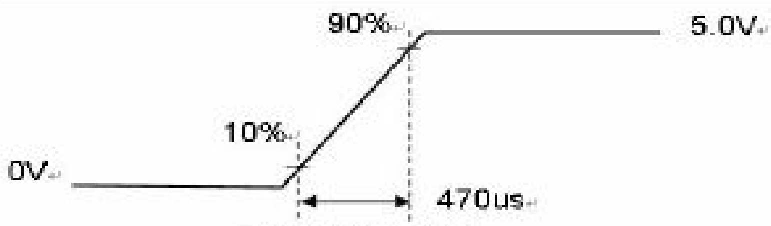
Input power specifications are as following:

Symbol	Parameter	Min	Typ	Max	Unit	Conditions
VDD	Logic/LCD Drive Voltage	4.5	5.0	5.5	[Volt]	+/-10%
IDD	Input Current	-	1.2	1.5	[A]	VDD= 5.0V, All Black Pattern At 60Hz,
PDD	VDD Power	-	6	8.25	[Watt]	VDD= 5.0V, All Black Pattern At 60Hz
IRush	Inrush Current	-	-	3	[A]	Note 1
VDDrp	Allowable Logic/LCD Drive Ripple Voltage	-	-	200	[mV] p-p	VDD= 5.0V, All Black Pattern At 60Hz

Note 1: Measurement conditions:

The duration of rising time of power input is 470us.





VDD rising time

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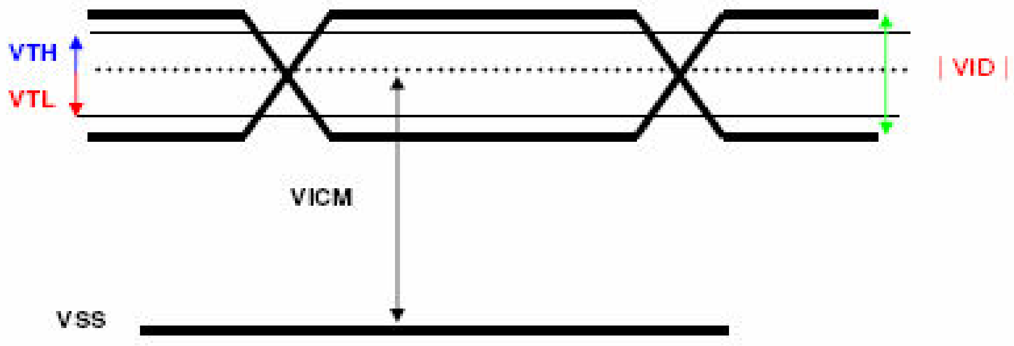
5.1.2 Signal Electrical Characteristics

Input signals shall be low or Hi-Z state when VDD is off. Please refer to specifications of SN75LVDS82DGG (Texas Instruments) in detail.

Characteristics of each signal are as following:

Symbol	Parameter	Min	Typ	Max	Units	Condition
VTH	Differential Input High Threshold	-	+50	+100	[mV]	VICM = 1.2V *Note 1*
VTL	Differential Input Low Threshold	-100	-50	-	[mV]	VICM = 1.2V *Note 1*
| VID |	Input Differential Voltage	100	400	600	[mV]	*Note 1*
VICM	Differential Input Common Mode Voltage	+1.0	+1.2	+1.4	[V]	VTH-VTL = 200MV (max) *Note 1*

Note 1: LVDS Signal Waveform



5.2 Backlight Unit

Parameter guideline for CCFL Inverter is under stable conditions at 25□ (Room Temperature):

Parameter	Min.□	Typ.	Max.□	Unit	Note
CCFL Standard Current (ISCFL)	7.0	7.5	8.0	[mA] rms	
CCFL Operation Current (IRCFL)	3.0	7.5	8.0	[mA] rms	*2*
CCFL Frequency (FCFL)	40	50	80	[KHz]	*3, 4*
CCFL Ignition Voltage (ViCFL, Ta= 0□)	1650	-	-	[Volt] rms	*5*
CCFL Ignition Voltage (ViCF, Ta= 25□)	1250	-	-	[Volt] rms	
CCFL Operation Voltage (VCFL)	-	700 (@7.5mA)	880	[Volt] rms	*6*
CCFL Power Consumption (PCFL)	-	11	12.1	[Watt]	
CCFL Life Time (LTCFL)	40,000	50,000	-	[Hour]	*7*

Note 1: Typ. values are AUO recommended design values.

*1 All of characteristics listed are measured under the condition using the AUO test inverter.

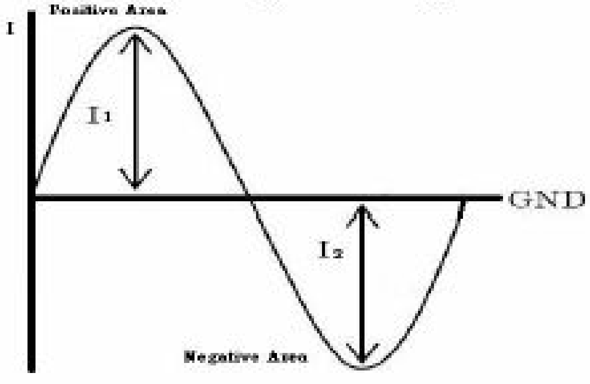
*2 It is recommended to check the inverter carefully. Sometimes, interfering noise stripes appear on the screen, and substandard luminance or flicker at low power may happen.

*3 While designing an inverter, it is suggested to check safety circuit very carefully. Impedance of CCFL, for instance, becomes more than 1 [M ohm] when CCFL is damaged.

*4 Generally, CCFL has certain delay time after applying kick-off voltage. It is recommended to keep on applying kick-off voltage for 1 [Sec] until discharge.

*5 Reducing CCFL current will increase CCFL discharge voltage and generally increases CCFL discharge frequency. So all the parameters of the inverter should be carefully designed so the inverter will not produce too much leakage current from high-voltage output.

*6 For designing CCFL current, it is highly recommanded to use symmetric and consistent sinusoidal wave for each CCFL input current with asymmetric ration of 10% or less in both postive area and negative area (ie. $0.9*\sqrt{2}*I_{rms} < I_1$ & $I_2 < 1.1*\sqrt{2}*I_{rms}$) as refer to the following diagram, otherwise proper CCFL functionality cannot be guarantied.



Note 2: CCFL standard current is measured **by continue mode inverter** at 25±2℃.

Note 3: CCFL discharge frequency should be carefully determined to avoid interference between inverter and TFT LCD.

Note 4: The frequency range will not affect lamp life and reliability characteristics.

Note 5: CCFL inverter should be able to release power that has generating capacity exceeding 1650 volt. Lamp units need minimum voltage, 1650 Volt, for ignition.

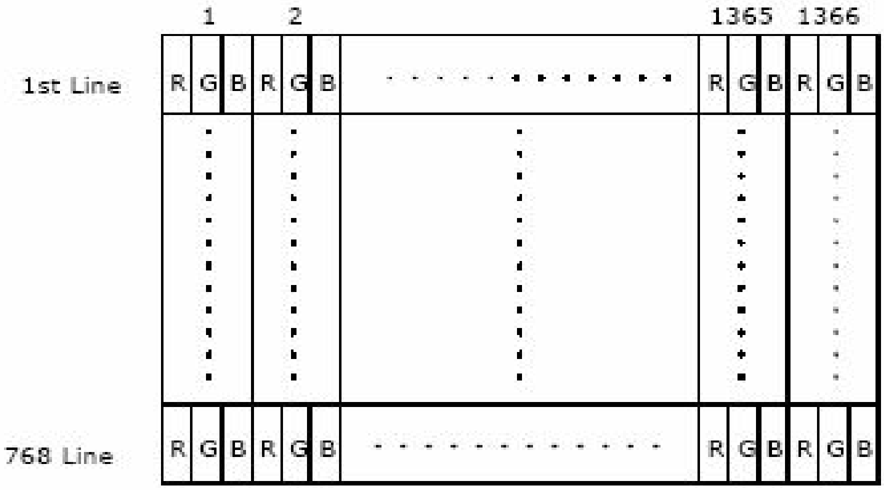
Note 6: The variance of CCFL power consumption is ±10%. (IRCFL × VCFL × 2 = PCFL)

Note 7: Definition of life time: brightness becomes 50%. The minimum life time of CCFL unit is on the condition of 7.5mA CCFL current and 25±2℃.

6.0 Signal Characteristic

6.1 Pixel Format Image

Following figure shows the relationship of the input signals and LCD pixel format.



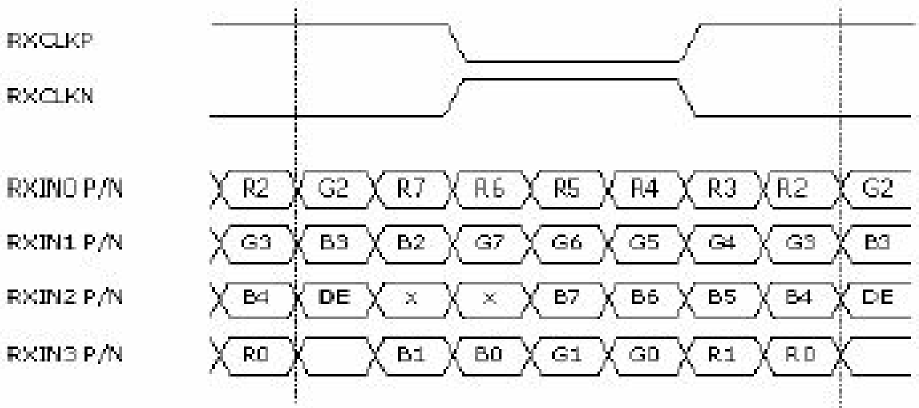
6.2 The input data format



8 BIT COLOR BIT ORDER	
MSB	R7
	R6
	R5
	R4
	R3
	R2
	R1
LSB	R0

6 BIT COLOR BIT ORDER	
MSB	R5
	R4
	R3
	R2
	R1
LSB	R0

LVDS Data Mapping of NS Format



8 BIT COLOR BIT ORDER	
MSB	R7
	R6
	R5
	R4
	R3
	R2
	R1
LSB	R0

6 BIT COLOR BIT ORDER	
MSB	R7
	R6
	R5
	R4
	R3
LSB	R2

LVDS Data Mapping of JEIDA Format

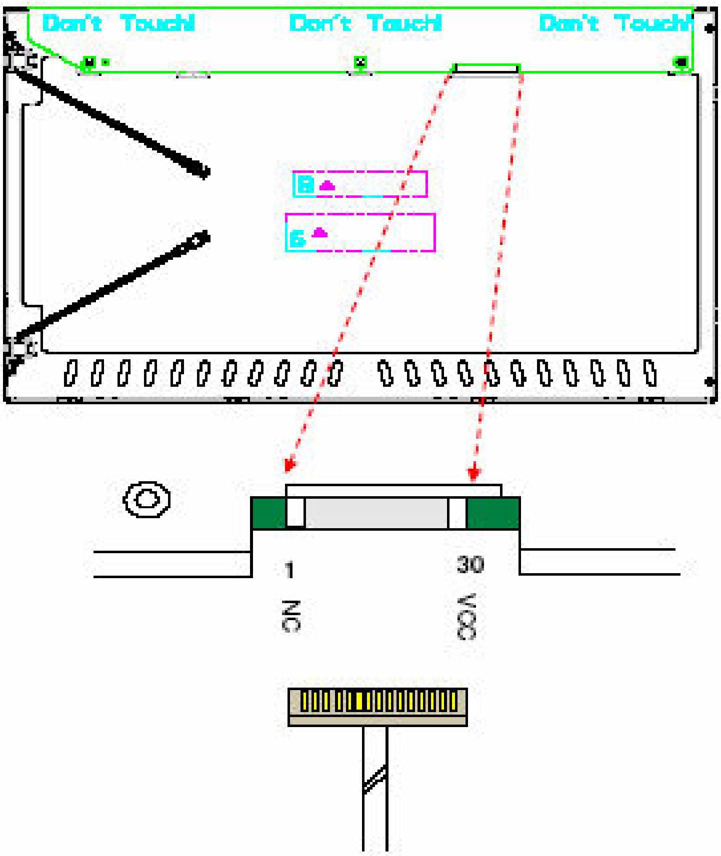
Note1: Normally, DE, VS, HS on EVEN channel are not used.
Note2: 8-bits signal input.

6.3 Signal Description

The module using one LVDS receiver SN75LVDS82(Texas Instruments). LVDS is a differential signal technology for LCD interface and high speed data transfer device. LVDS transmitters shall be SN75LVDS83(negative edge sampling). The first LVDS port(RxOxxx) transmits odd pixels while the second LVDS port(RxExxx) transmits even pixels.

PIN #	SIGNAL NAME	DESCRIPTION
1	NC	No contact (For AUO internal use)
2	NC	No contact (For AUO internal use)
3	NC	No contact (For AUO internal use)
4	GND	Power Ground
5	RXIN0-	Negative LVDS differential data input (0)
6	RXIN0+	Positive LVDS differential data input (0)
7	GND	Power Ground
8	RXIN1-	Negative LVDS differential data input (1)
9	RXIN1+	Positive LVDS differential data input (1)
10	GND	Power Ground
11	RXIN2-	Negative LVDS differential data input (2)
12	RXIN2+	Positive LVDS differential data input (2)
13	GND	Power Ground
14	RXCLKIN-	Negative LVDS differential clock input (clock)
15	RXCLKIN+	Positive LVDS differential data input (clock)
16	GND	Power Ground
17	RXIN3-	Negative LVDS differential data input (3)
18	RXIN3+	Positive LVDS differential data input (3)
19	GND	Power Ground
20	NC	No contact (For AUO internal use)
21	NC	No contact (For AUO internal use)
22	NC	No contact (For AUO internal use)
23	GND	Power Ground
24	GND	Power Ground
25	GND	Power Ground
26	VCC	+5V power supply
27	VCC	+5V power supply
28	VCC	+5V power supply
29	VCC	+5V power supply
30	VCC	+5V power supply

Note1: Start from left side



Note2: Input signals of clock shall be the same timing.
Note3: Please follow TV VESA Pin Assignment.

6.4 Timing Characteristics

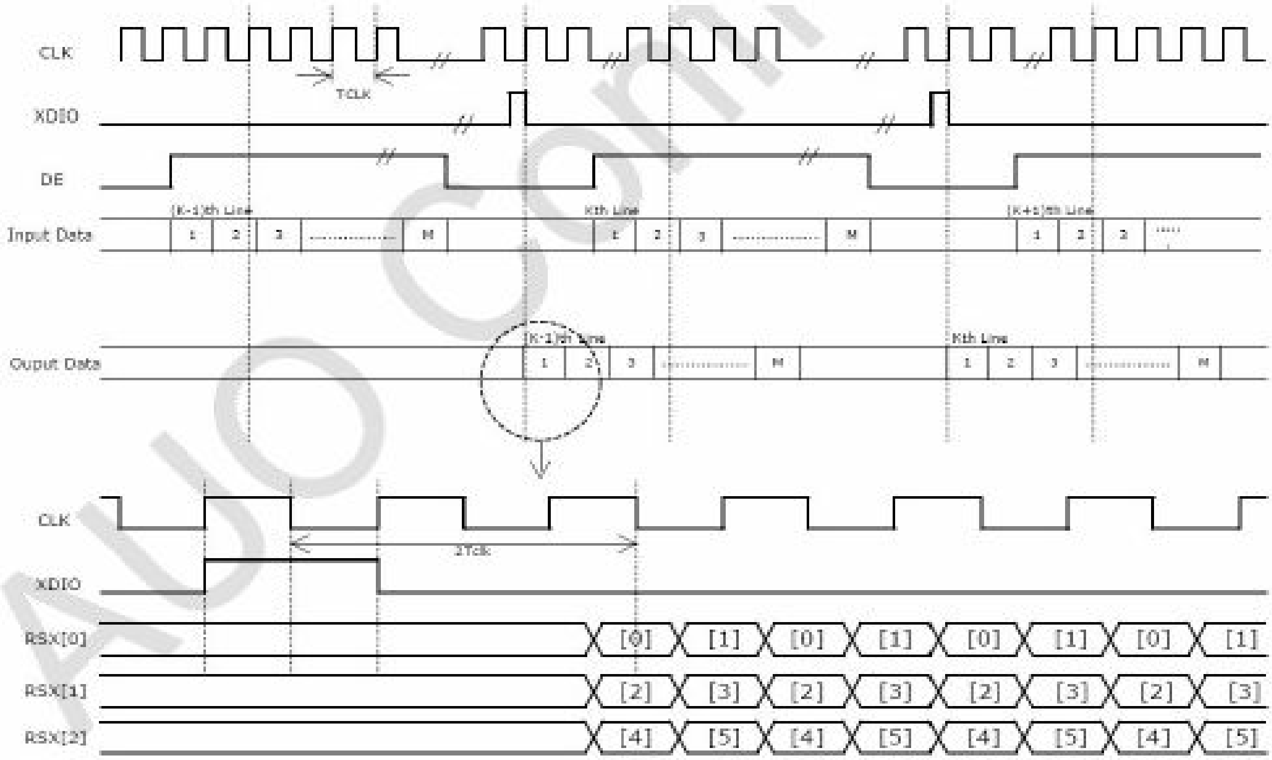
Basically, interface timing described here is not actual input timing of LCD module but close to output timing of SN75LVDS82DGG (Texas Instruments) or equivalent.

Signal	Item	Symbol	Min	Typ	Max	Unit
V-section	Period	Tv	776	808	1023	Th
	Active	Tdisp(v)	768	768	768	Th
	Blanking	Tblk(v)	8	40	255	Th
H-section	Period	Th	1480	1606	2047	Tclk
	Active	Tdisp(h)	1366	1366	1366	Tclk
	Blanking	Tblk(h)	114	240	681	Tclk
Clock	Period	Tclk	-	12.8	-	ns
	Frequency	Freq	-	78	90	MHz
Frame Rate	Frame Rate	F	50	60	75	Hz

Note1 : DE mode only
Note2 : Clock Frequency 90MHz(Max.)= 1480(H)*810(V)*75Hz

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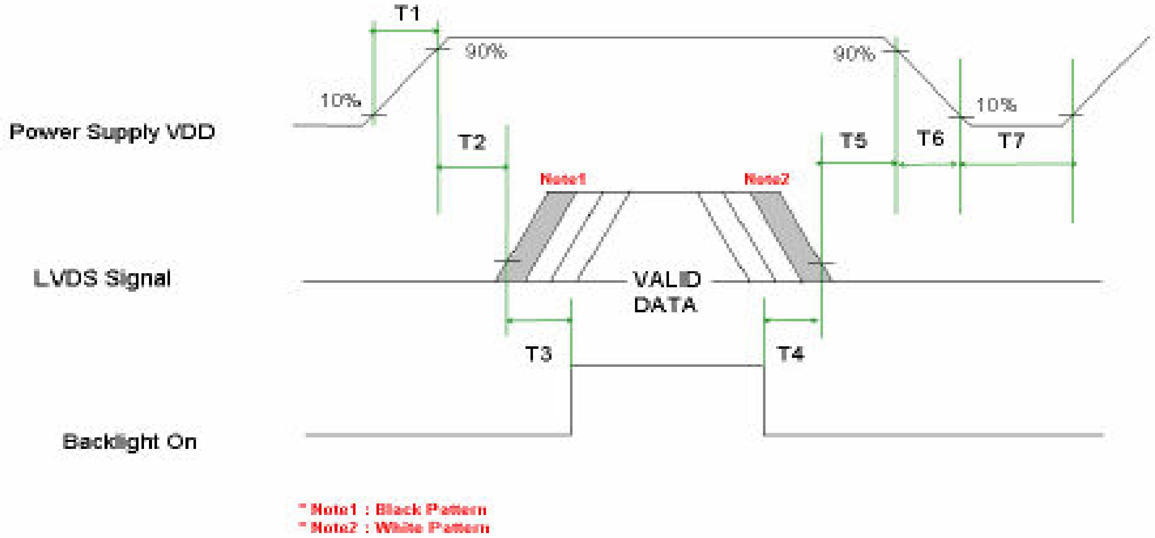
6.5 Timing diagram



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6.6 Power ON/OFF Sequence

VDD power and lamp on/off sequence are as follows. Interface signals are also shown in the chart. Signals from any system shall be Hi-Z state or low level when VDD is off.



Parameter	Value			Unit
	Min.	Typ.	Max.	
T1	0.5	-	10	[msec]
T2	0	40	50	[msec]
T3	200	-	-	[msec]
T4	200	-	-	[msec]
T5	0.5	16	50	[msec]
T6	-	-	100	[msec]
T7	1000	-	-	[msec]

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7.0 Connector & Pin Assignment

Physical interface is described as for the connector on module. These connectors are capable of accommodating the following signals and will be following components.

7.1 TFT LCD Module

Connector Name / Designation	Interface Connector / Interface card
Manufacturer	JAE or STM
Type Part Number	FI-XB30SSRL-HF16(JAE)/MSCKT2407P30HB(STM)
Mating Housing Part Number	FI-X30HL(JAE) (Locked Type) FI-X30H (JAE)(Unlocked Type)

7.1.1 Pin Assignment

Pin#	Signal Name	Pin#	Signal Name
1	NC	2	NC
3	NC	4	GND
5	RXIN0-	6	RXIN0+
7	GND	8	RXIN1-
9	RXIN1+	10	GND
11	RXIN2-	12	RXIN2+
13	GND	14	RXCLKIN-
15	RXCLKIN+	16	GND
17	RXIN3-	18	RXIN3+
19	GND	20	NC
21	NC	22	NC
23	GND	24	GND
25	GND	26	VCC
27	VCC	28	VCC
29	VCC	30	VCC

7.2 Backlight Unit

Physical interface is described as for the connector on module. These connectors are capable of accommodating the following signals and will be following components.

Connector Name / Designation	Lamp Connector / Backlight lamp
Manufacturer	YEON HO
Type Part Number	35001HS-02L
Mating Type Part Number	35001WR-02LP

7.2.1 Signal for Lamp connector

	Connector No.	Pin No.	Input	Color	Function
Upper	CN1	1	Hot1	Pink	High Voltage (Lamp1)
		2	Cold1	White	Low Voltage(Lamp1)

	Connector No.	Pin No.	Input	Color	Function
Lower	CN2	1	Hot1	Pink	High Voltage(Lamp2)
		2	Cold1	White	Low Voltage (Lamp2)

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8.0 Reliability Test

Environment test conditions are listed as following table.

Items	Required Condition	Note
Temperature Humidity Bias (THB)	Ta= 50□, 80%RH, 300hours	
High Temperature Operation (HTO)	Ta= 50□, 50%RH, 300hours	
Low Temperature Operation (LTO)	Ta= 0□, 300hours	
High Temperature Storage (HTS)	Ta= 60□, 300hours	
Low Temperature Storage (LTS)	Ta= -20□, 300hours	
Vibration Test (Non-operation)	Acceleration: 1.5 Grms Wave: Random Frequency: 10 - 200 Hz Sweep: 30 Minutes each Axis (X, Y, Z)	
Shock Test (Non-operation)	Acceleration: 50 G Wave: Half-sine Active Time: 20 ms Direction: ±X, ±Y, ±Z (one time for each Axis)	
Drop Test	Height: 60 cm, package test	
Thermal Shock Test (TST)	-20□/30min, 60□/30min, 100 cycles	1
On/Off Test	On/10sec, Off/10sec, 30,000 cycles	
ESD (Electro Static Discharge)	Contact Discharge: ± 8KV, 150pF(330Ω) 1sec, 8 points, 25 times/ point.	2
	Air Discharge: ± 15KV, 150pF(330Ω) 1sec 8 points, 25 times/ point.	
Altitude Test	Operation:10,000 ft Non-Operation:30,000 ft	

Note 1: The TFT-LCD module will not sustain damage after being subjected to 100 cycles of rapid temperature change. A cycle of rapid temperature change consists of varying the temperature from -20℃ to 60℃, and back again. Power is not applied during the test. After temperature cycling, the unit is placed in normal room ambient for at least 4 hours before power on.

Note 2: EN61000-4-2, ESD class B: Certain performance degradation allowed
No data lost
Self-recoverable
No hardware failures.

9.0 Shipping Label

The label is on the panel as shown below:



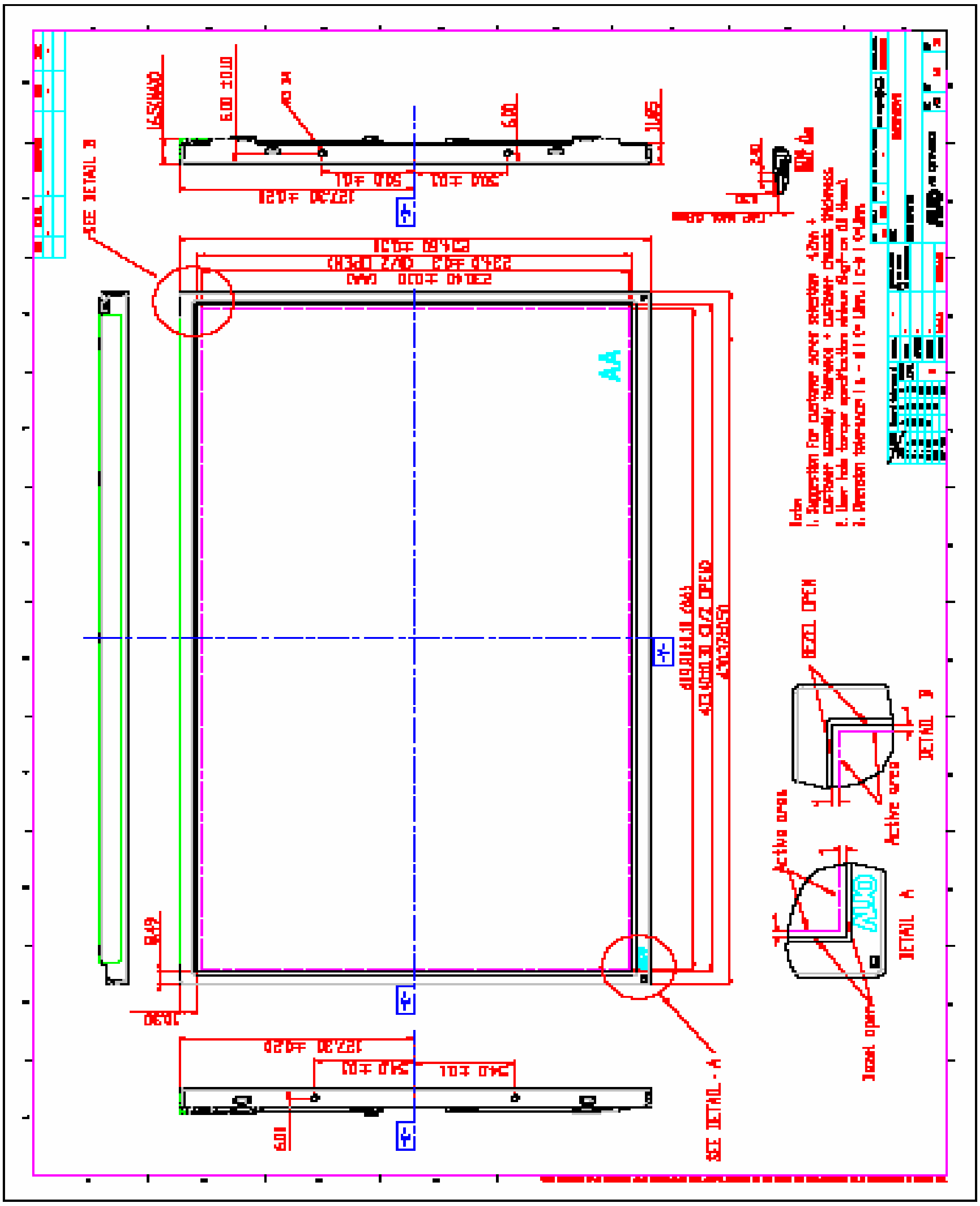
Note 1: For Pb Free products, AUO will add (Pb) for identification.

Note 2: For RoHS compatible products, AUO will add [RoHS] for identification.

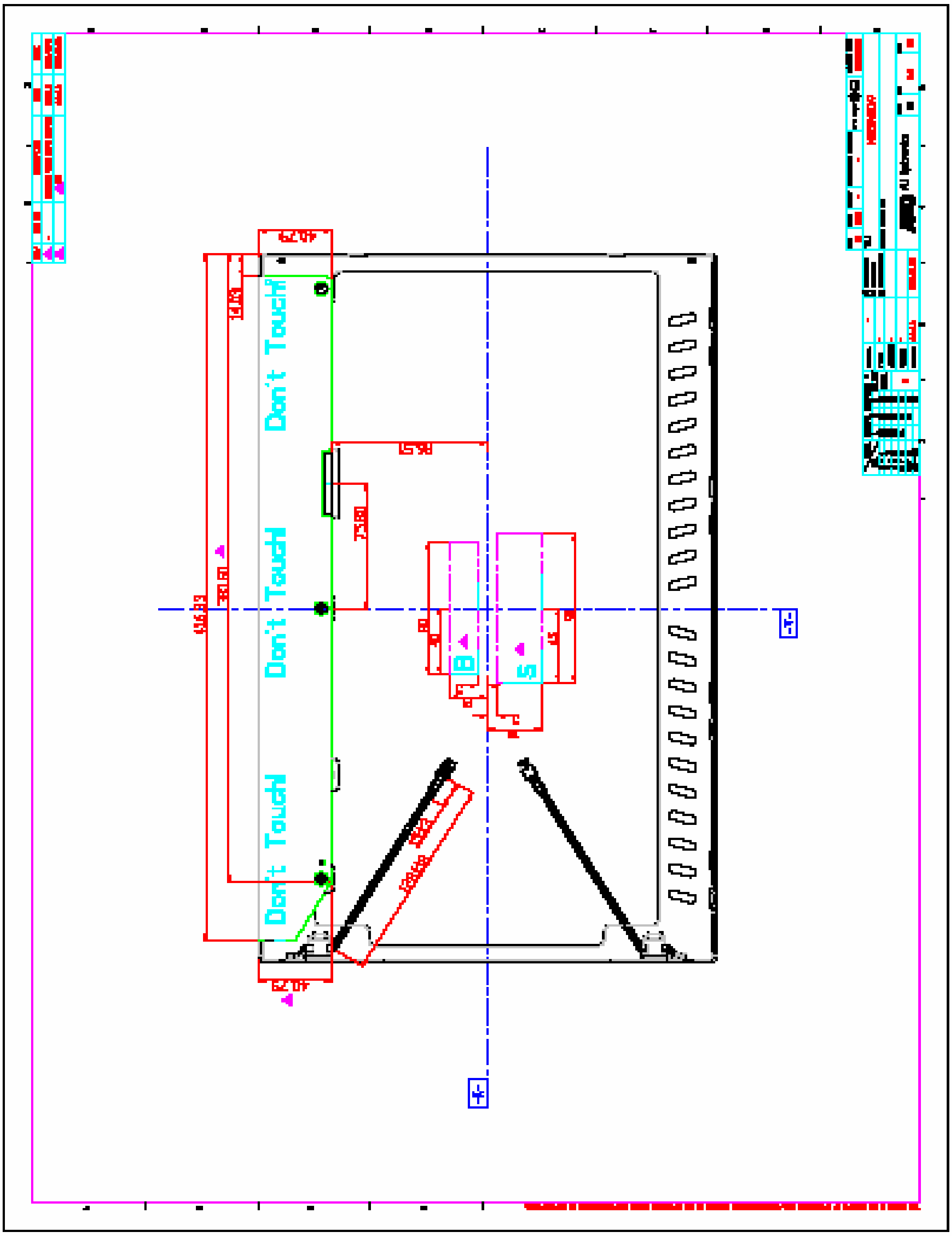
Note 3: For China RoHS compatible products, AUO will add (15) for identification.

Note 4: The Green Mark will be presented only when the green documents have been ready by AUO Internal Green Team.

10.0 Mechanical Characteristics



Ver 0.1



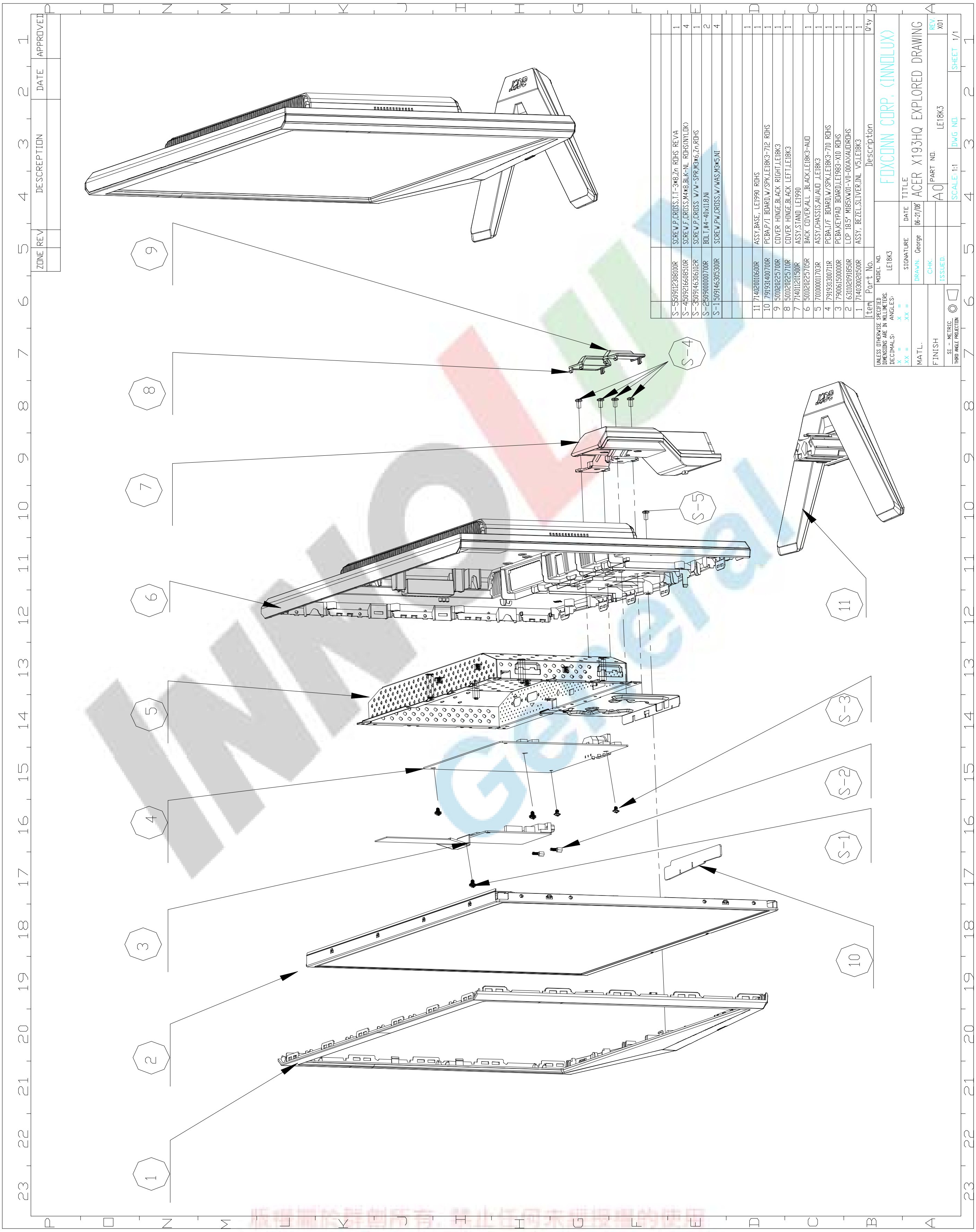
Ver 0.1

03 Exploded Diagram

3.1 Screw List

Item	Part No.	Description	Qty	Fixed T(kg*cm)	Remark
1	509146305300R	SCREW,P,CROSS W/WAS,M3*5,Zn ROHS	3	4.5~5.0	Power Board to Chassis*3
2	509000000700R	BOLT,#4-40x11.8,Ni ROHS	2	4.0±0.5	D-SUB CON*2
3	509112612500R	SCREW P T4*12 Zn-BLK ROHS	3	8±0.5	Hinge to Stand
4	509216608110R	SCREW,F,CROSS,M4*8,Zn, ROHS	4	6.5±0.5	Hinge to backcover
5	509212606110R	SCREW,F,CROSS,T4*6,Zn, ROHS(5.8~6.2)	10	6.5±0.5	Base Plate to Base
6	509112308100R	SCREW,P,CROSS,T.T-3*8,Zn,ROHS	1	3.0~4.0	Back cover to Front bezel

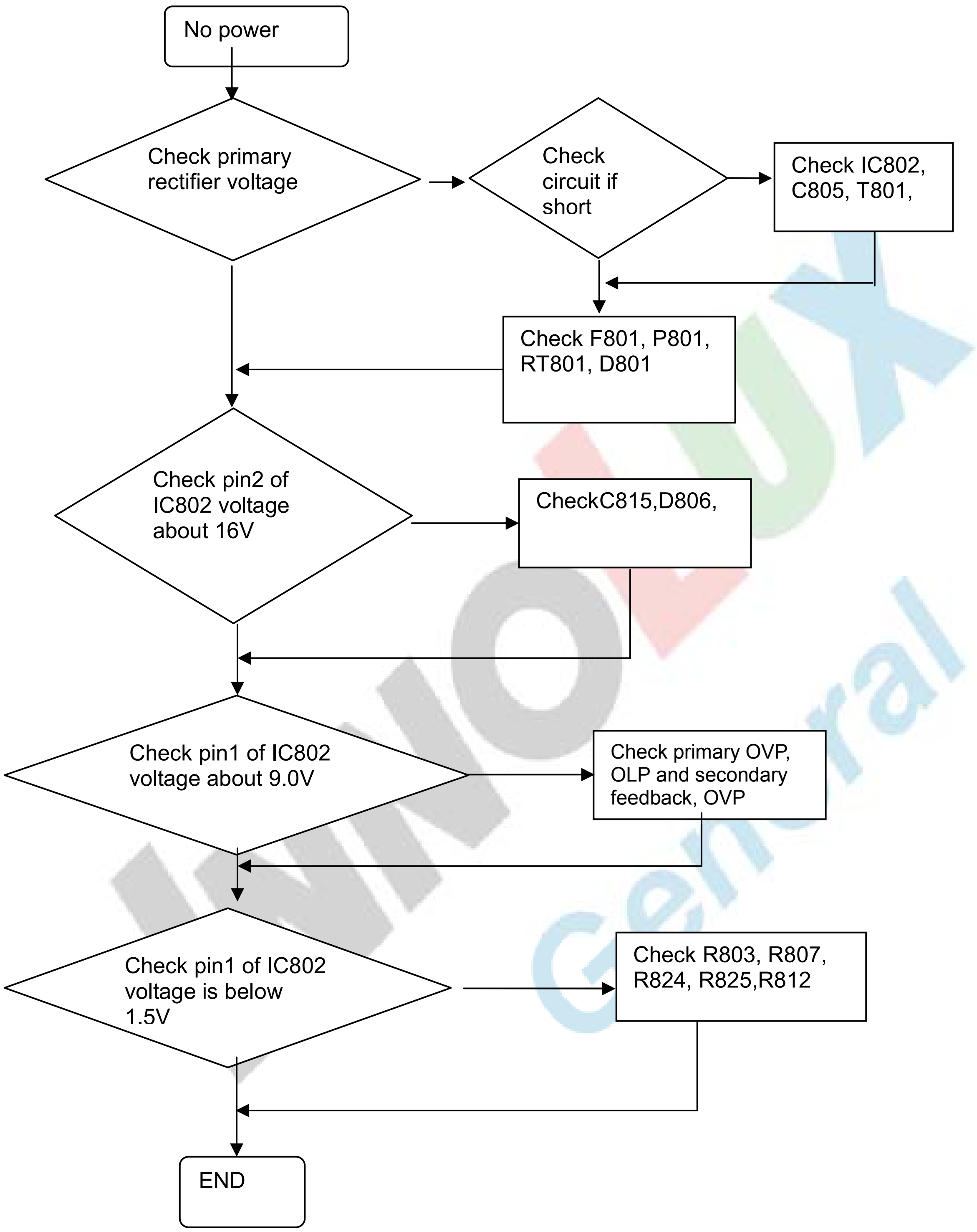
3.2 . LCD Exploded drawing (All)



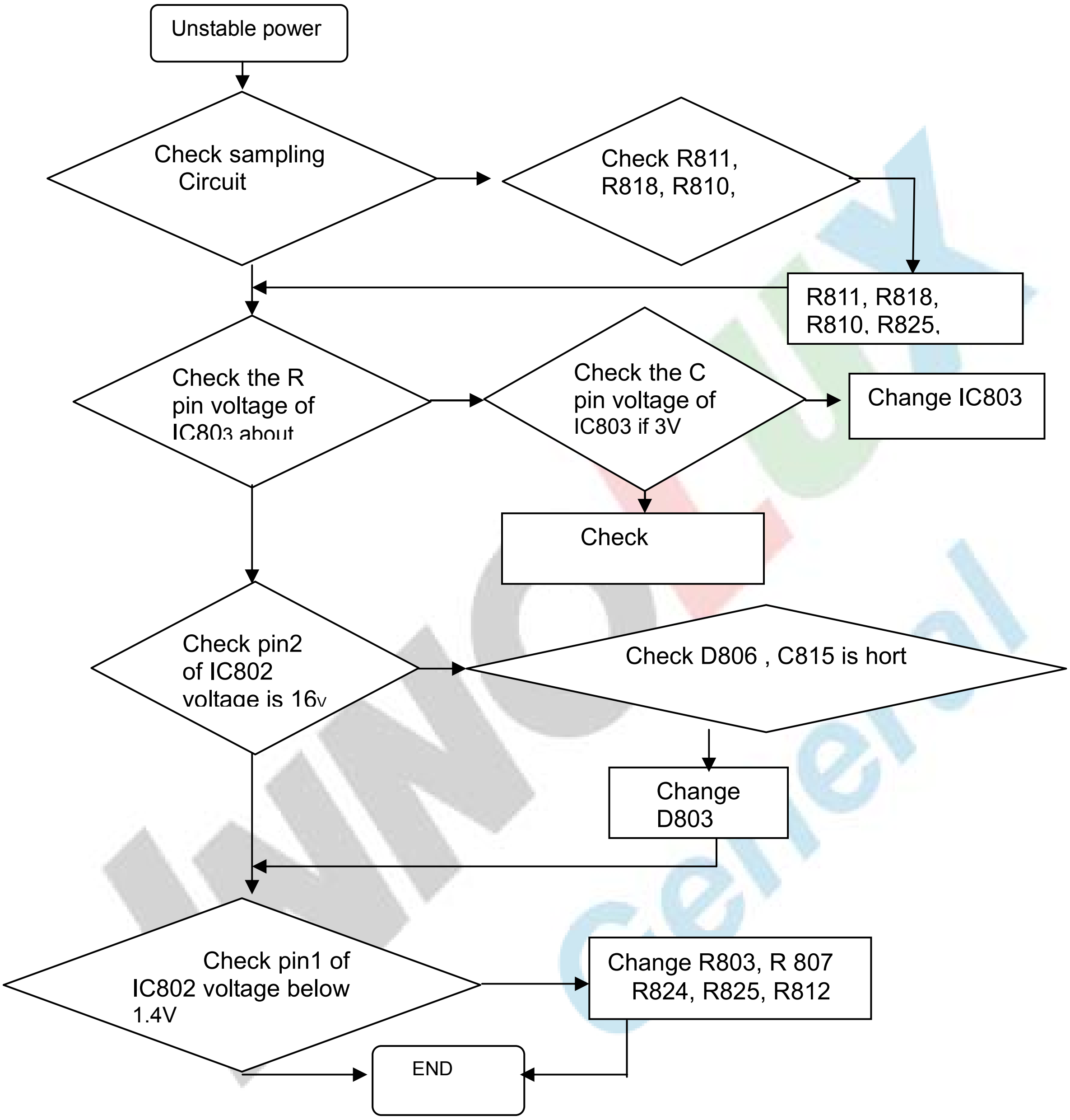
Item	Part No.	Description	Q'ty
S-5	509112308100R	SCREW,P,CROSS,T.T-3*8,Zn ROHS REV:A	1
S-4	509216608510R	SCREW,F,CROSS,M4*8,BLK-NL ROHS(NYLOK)	4
S-3	509146306102R	SCREW,P,CROSS W/W-SPR,M3*6,Zn,ROHS	1
S-2	509000000700R	BOLT,#4-40x11.8,Ni	2
S-1	509146305300R	SCREW,PW,CROSS,W/WAS,M3*5,NI	4
			1
11	714020010600R	ASSY,BASE, LE1990 ROHS	1
10	791931400700R	PCBA,P/I BOARD,W/SPK,LE18K3-712 ROHS	1
9	501020225700R	COVER HINGE,BLACK RIGHT,LE18K3	1
8	501020225710R	COVER HINGE,BLACK LEFT,LE18K3	1
7	714011201500R	ASSY,STAND LE1990	
6	501020225705R	BACK COVER,ALL ,BLACK,LE18K3-AUD	1
5	701000011703R	ASSY,CHASSIS,AU,AUD ,LE18K3	1
4	791931300711R	PCBA,I/F BOARD,W/SPK,LE18K3-710 ROHS	1
3	790061500000R	PCBA,KEYPAD BOARD,LE1983-X10 ROHS	1
2	631102091850R	LCP 18.5" M185XW01-V0-00(A)(AUD)ROHS	1
1	714030020500R	ASSY, BEZEL,SLIVER,INL V5,LE18K3	1

04 Troubleshooting

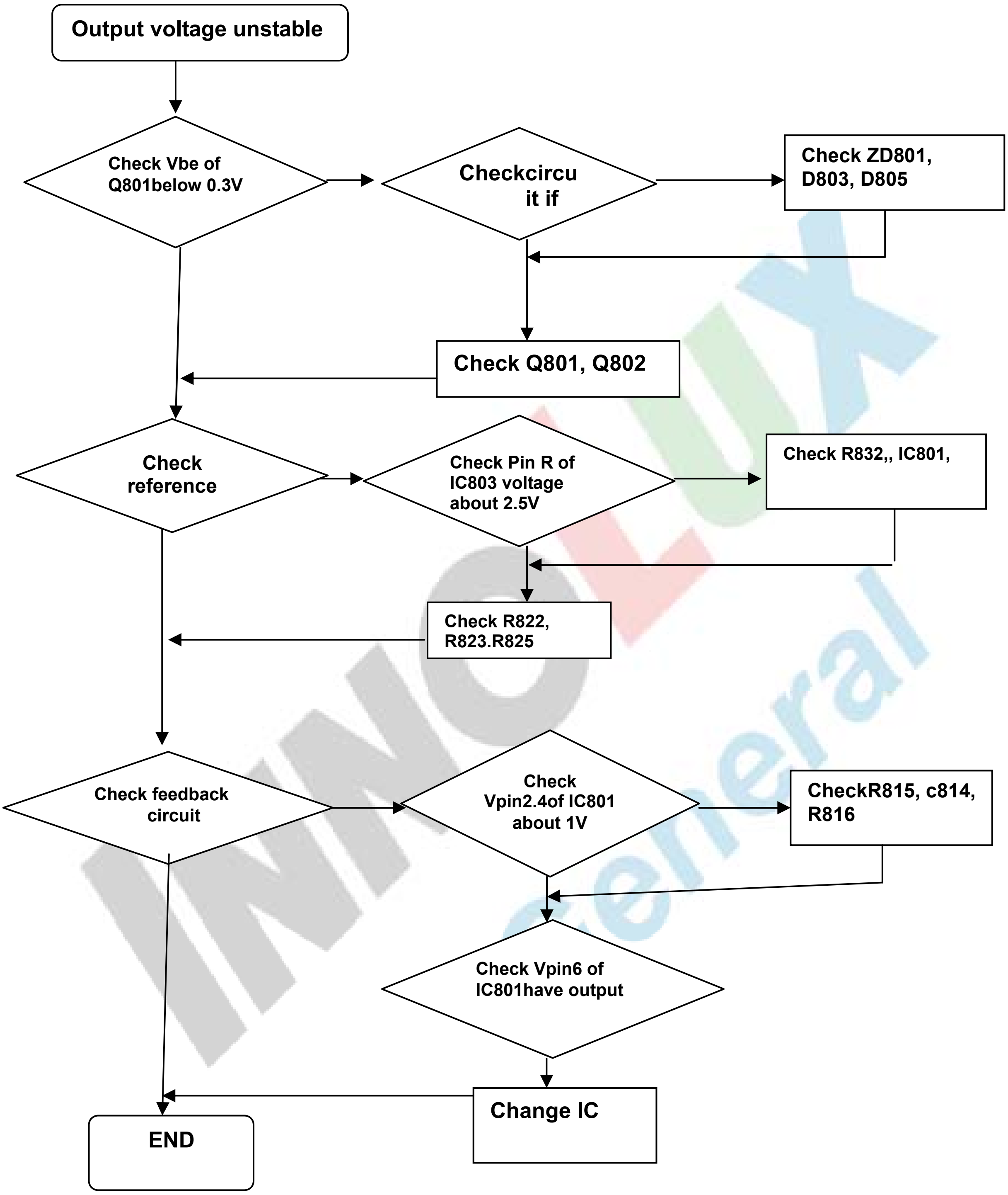
4.1 No Power & LED Off



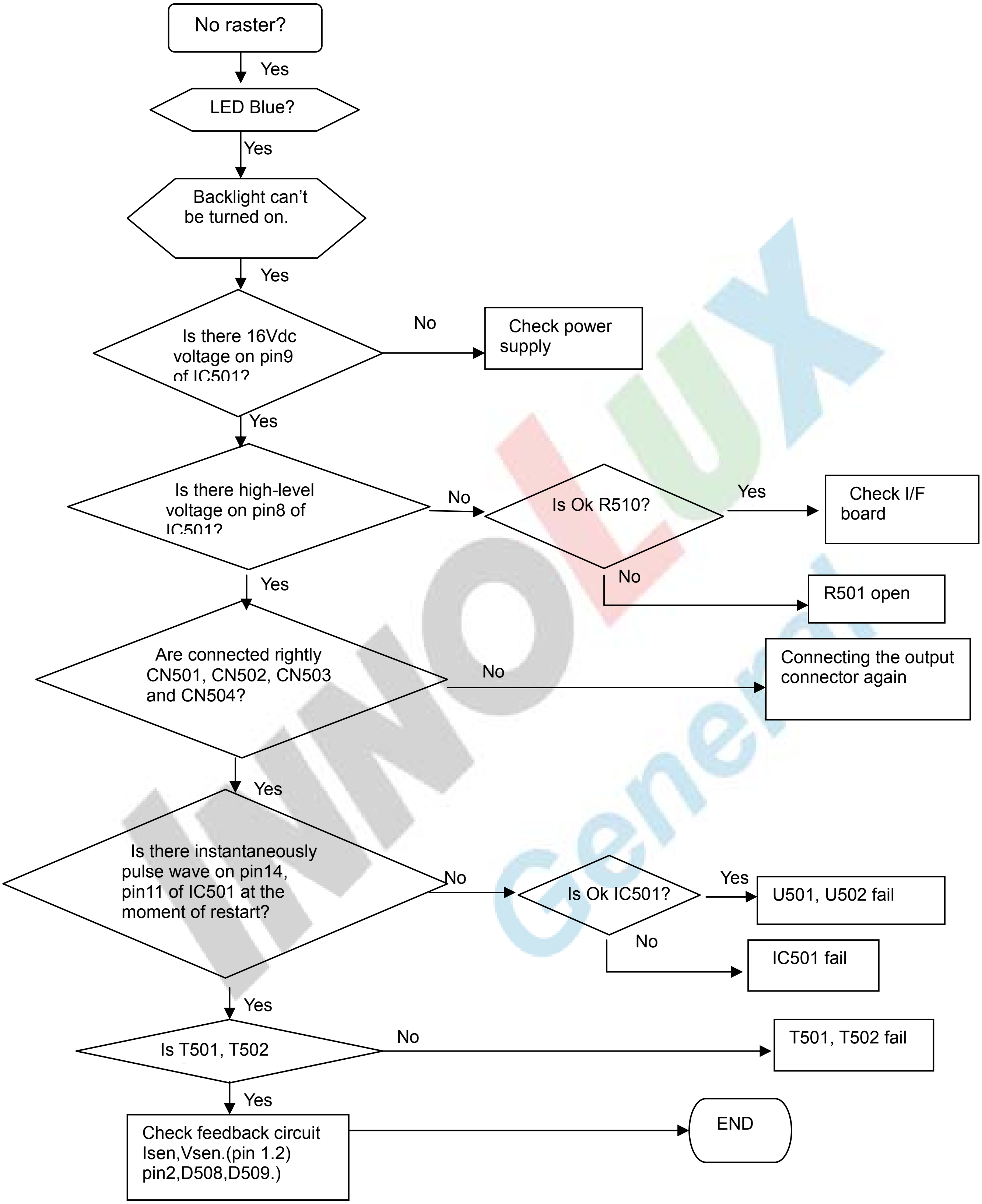
4.2 Unstable Power



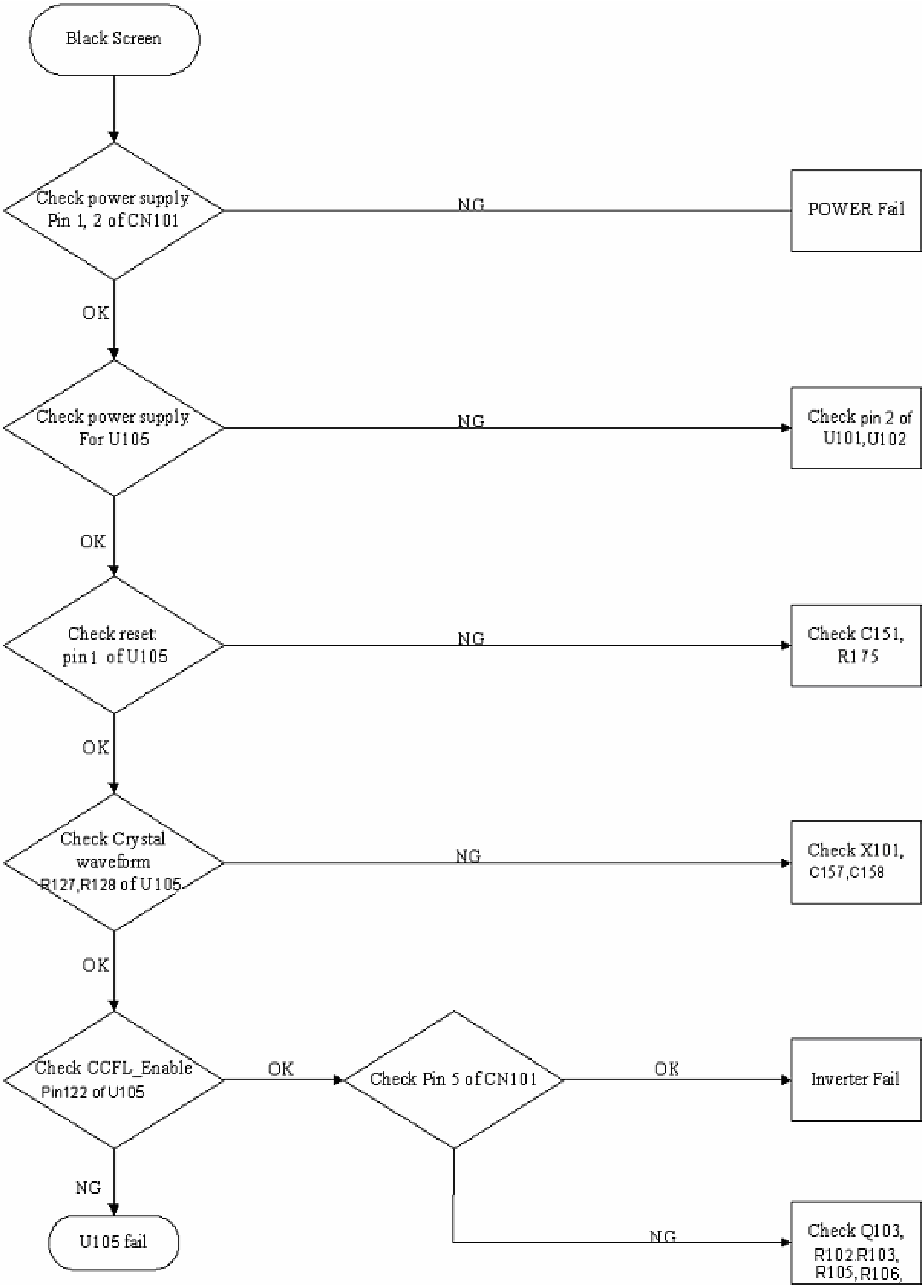
4.3 DC output voltage is unstable



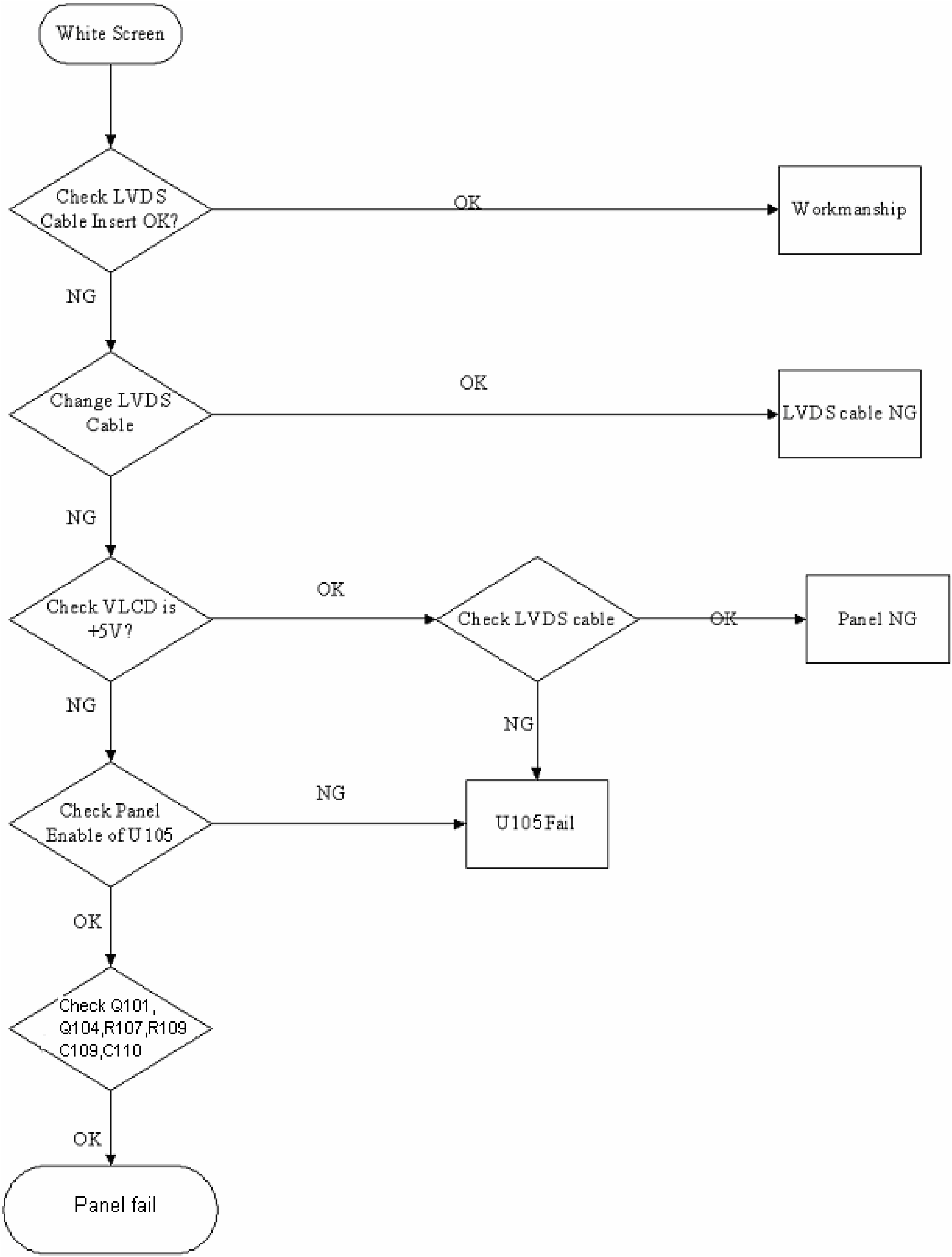
4.4 No Raster


No raster?
Yes
LED Blue?
Yes
Backlight can't be turned on.
Yes
Is there 16Vdc voltage on pin9 of IC501?
No
Check power supply
Yes
Is there high-level voltage on pin8 of IC501?
No
Is Ok R510?
Yes
Check I/F board
No
R501 open
Yes
Are connected rightly CN501, CN502, CN503 and CN504?
No
Connecting the output connector again
Yes
Is there instantaneously pulse wave on pin14, pin11 of IC501 at the moment of restart?
No
Is Ok IC501?
Yes
U501, U502 fail
No
IC501 fail
Yes
Is T501, T502
No
T501, T502 fail
Yes
Check feedback circuit Isen,Vsen.(pin 1.2) pin2,D508,D509.)
END

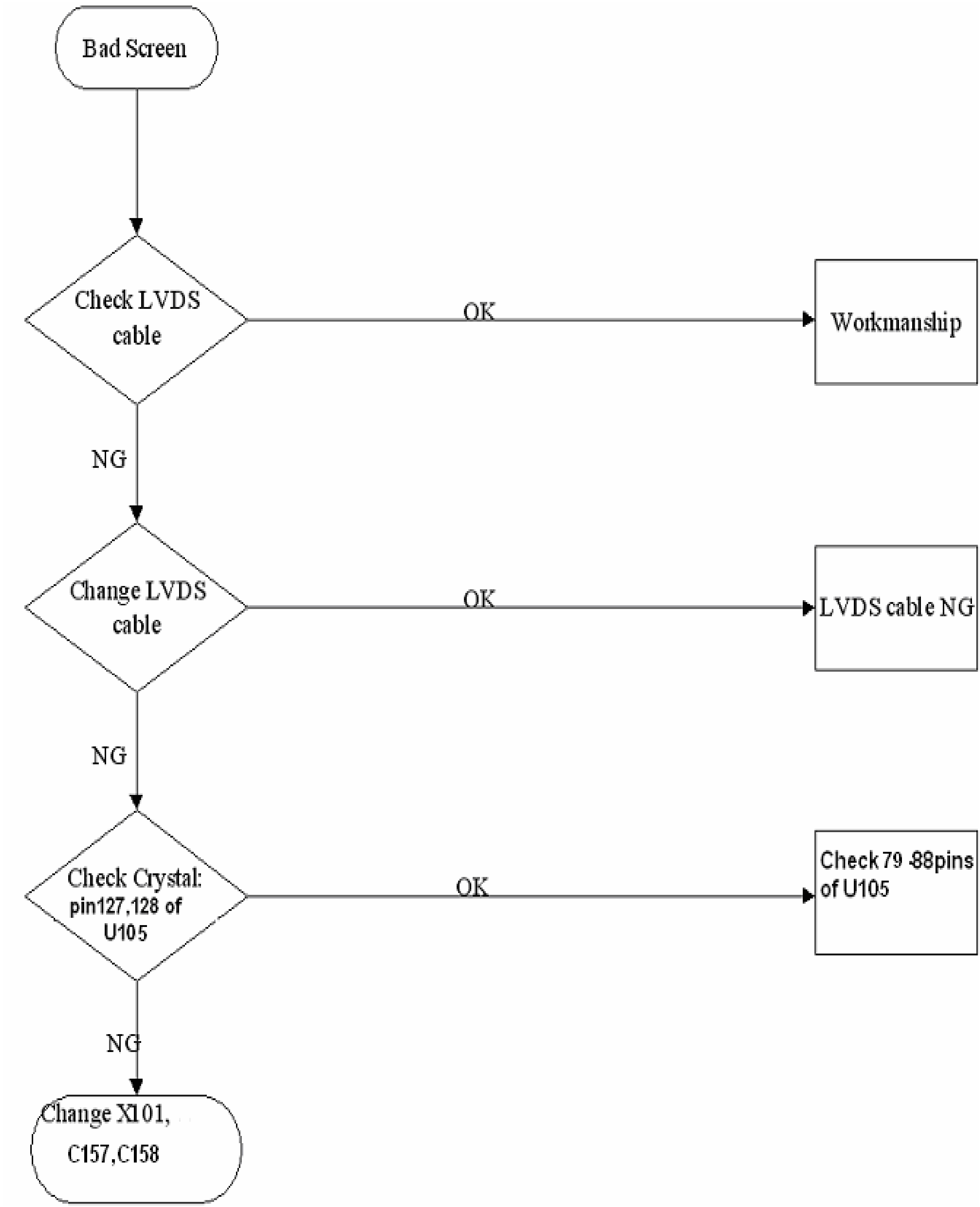
4.5 Black Screen



4.6. White screen



4.7 Bad Screen



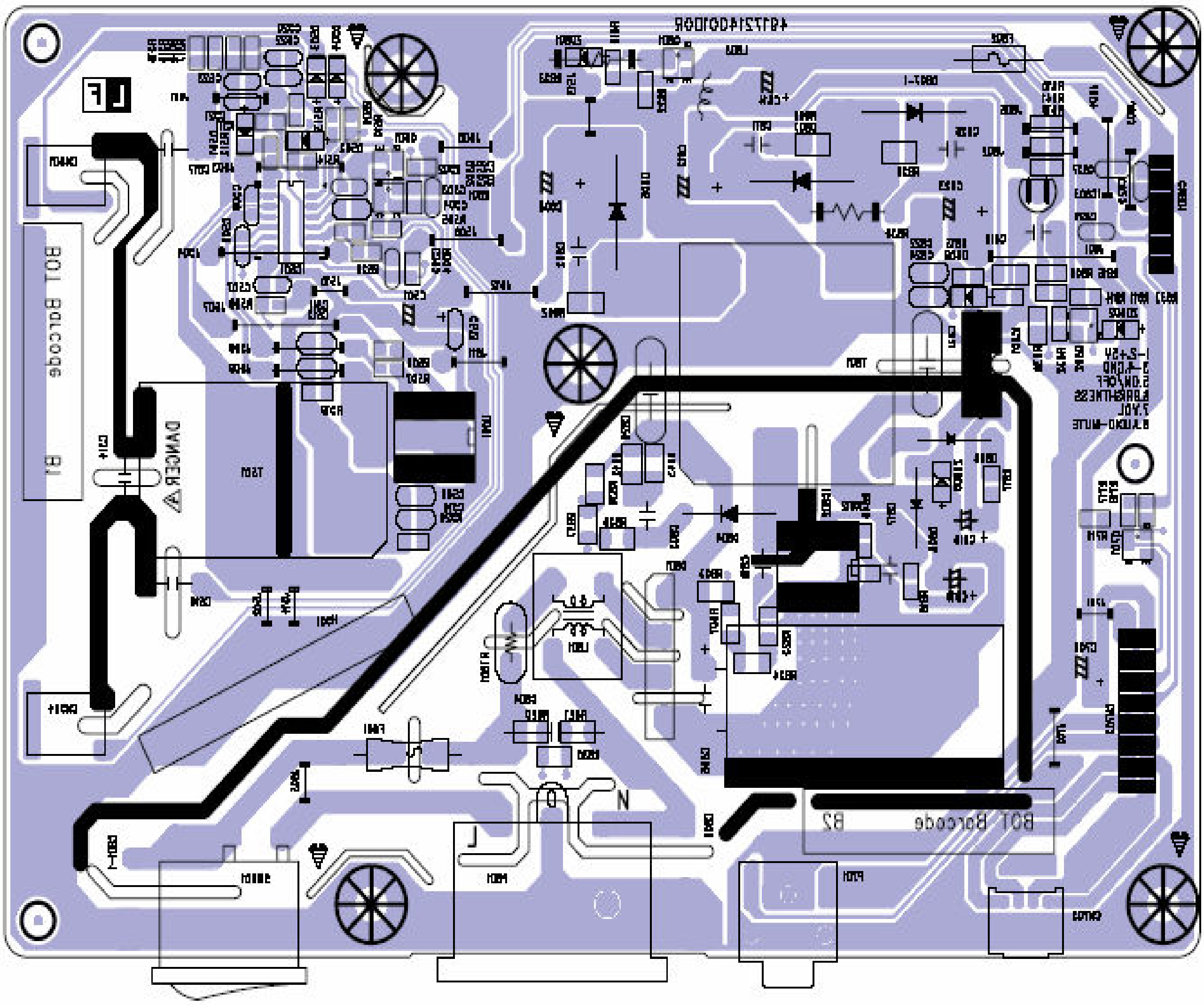
05 Spare parts List

ACER PART NO.	OEM PART NO	DESCRIPTION	UNIT PRICE (US$)	ET.LEH0C.024
55.LEH0J.001	791931300702R	PCBA,I/F BOARD,W/SPK,LE18K3-712 ROHS	6.20	1
19.LEH0J.001	791931400700R	PCBA,P/I BOARD,W/SPK,LE18K3-712 ROHS	10.00	1
55.LAU0J.002	790061500000R	PCBA,KEYPAD BOARD,LE1983-X10 ROHS	1.00	1
50.LEH0J.001	430300802230R	HRN ASSY 2x4P to 8P 190mm UL1571#28	0.29	1
50.LEH0J.002	430303001970R	HRN LVDS FFC 30P 147MM	0.50	1
50.LBQ0J.001	453010100380R	CABLE,D-SUB 15P MALE 6FT BLACK/BLUE, ROH	1.00	1
50.L63VF.003	453030300120R	CABLE AUDIO 1P 6FT BLACK/GREEN CP03B06P0	0.40	1
50.LA10J.003	453030300370R	CABLE,DVI-D 18+1P MALE 6FT BLACK , ROHS	1.30	1
27.L46VF.005	453070800230R	PWRCORD 5A/250V BLK 6FT UK3Gx.75mm(SP60/	1.40	1
42.LEH0J.001	501020225700R	COVER HINGE,BLACK RIGHT,LE18K3	0.05	1
42.LEH0J.002	501020225701R	COVER HINGE,BLACK LEFT,LE18K3	0.14	1
60.LEH0J.003	701000011703R	ASSY,CHASSIS,ALL,AUO ,LE18K3	1.60	1
60.LAU0J.005	714011201500R	ASSY,STAND LE1990	1.80	1
60.LAS0J.004	714020010600R	ASSY,BASE, LE1990 ROHS	1.50	1
60.LEH0J.004	714030020501R	ASSY, BEZEL,BLACK,INL,LE18K3	3.00	1
LK.18005.002	631102092170RA	LCP 18.5" M185XW01-V1-0A(A)(AUO)ROHS	114.00	1

06 Schematics and Layouts

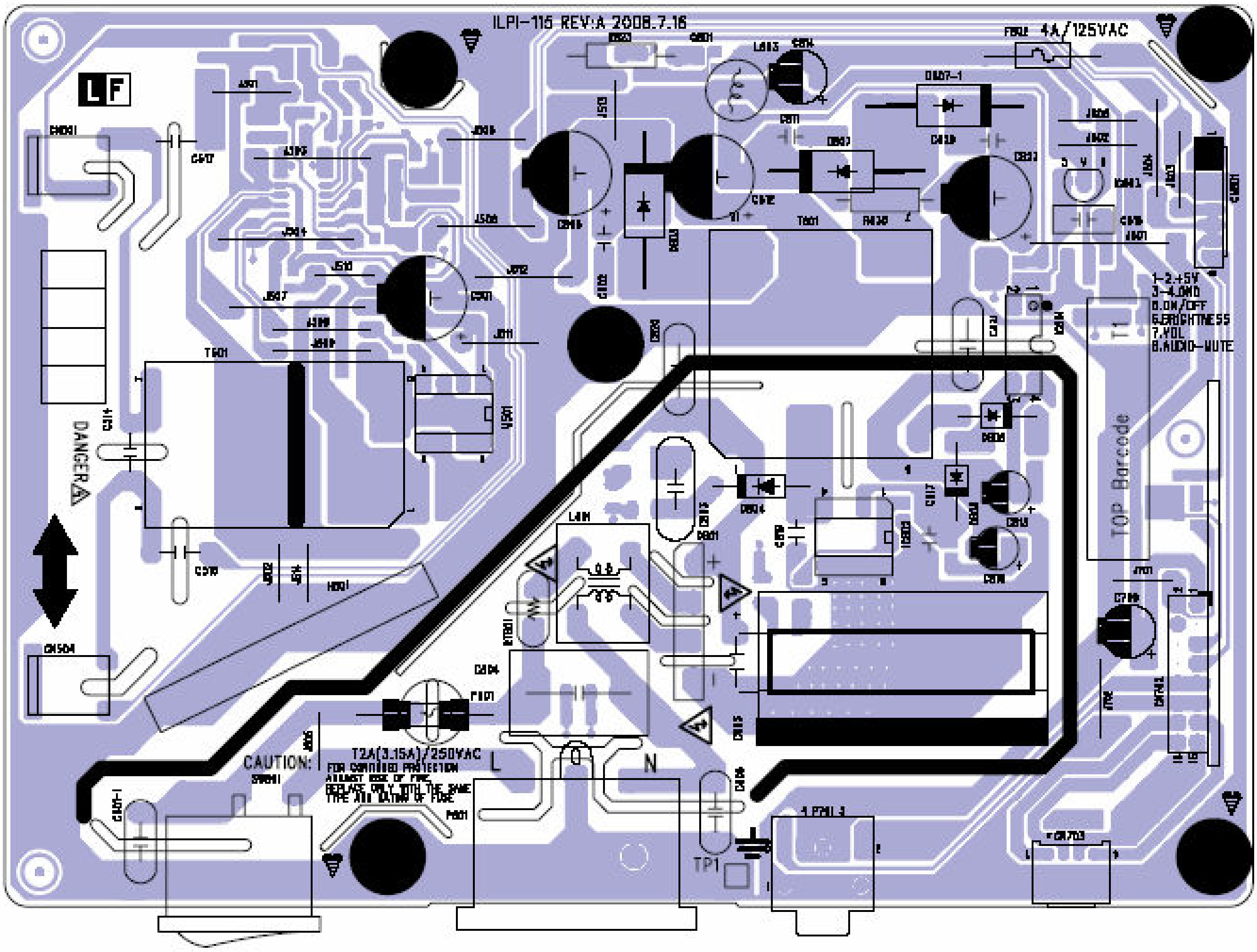
6.1 PI BD Layout

LAYER	SILKSCREEN BOTTOM			
PCB NO :	ILPI-115	REV :	A	DESIGNER:Huang LM
FILE NAME :	ILPI-115 .PCB	DATE :	2008.07.16	



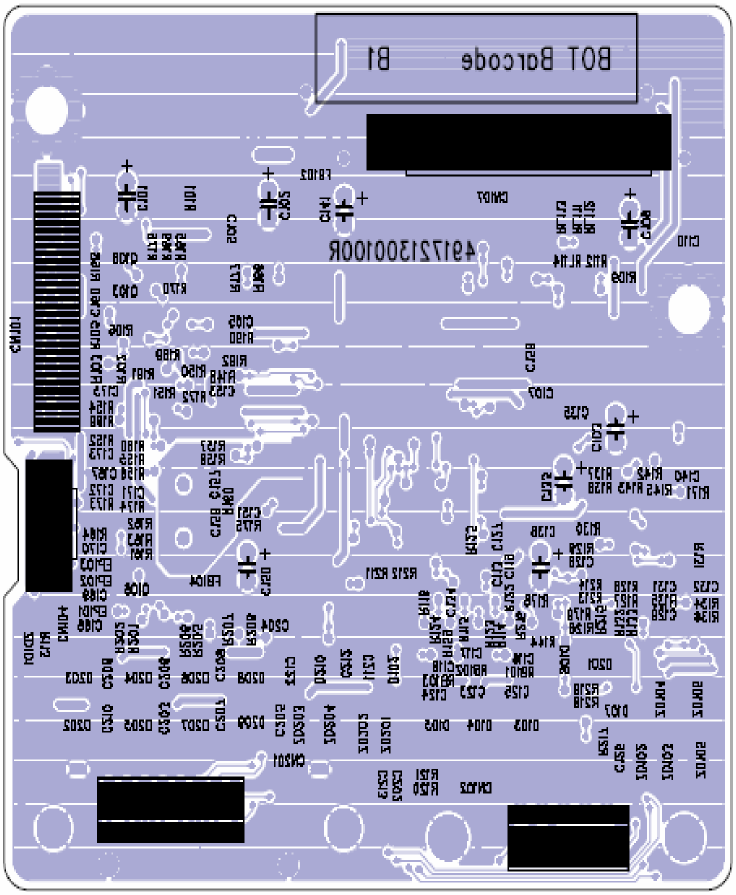
6.2 PI BD Layout

LAYER	SILKSCREEN TOP			
PCB NO :	ILPI-115	REV :	A	DESIGNER:Huang LM
FILE NAME :	ILPI-115 .PCB	DATE :	2008.07.16	



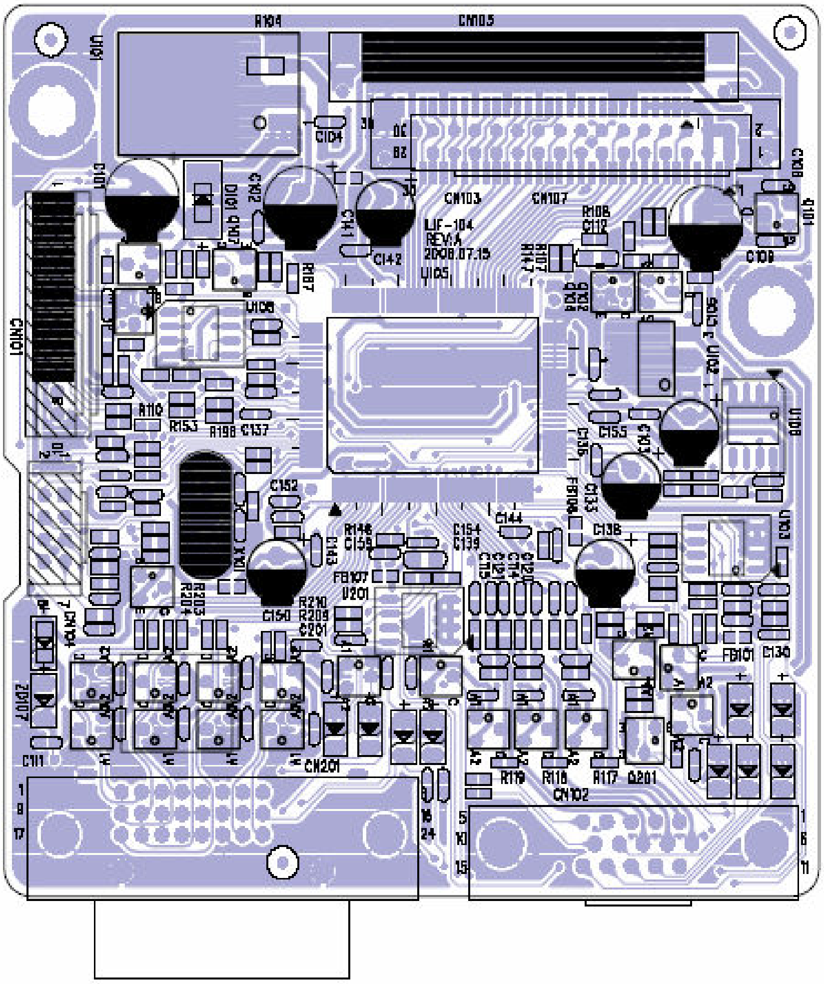
6.3 IF BD Layout

Innolux	LAYER	SILKSCREEN BOTTOM			
	PCB NO	491721300100R	REV	A	DESIGNER: XINKE RUAN
	FILE NO	ILIF-104	REMARK	2008.07.15	

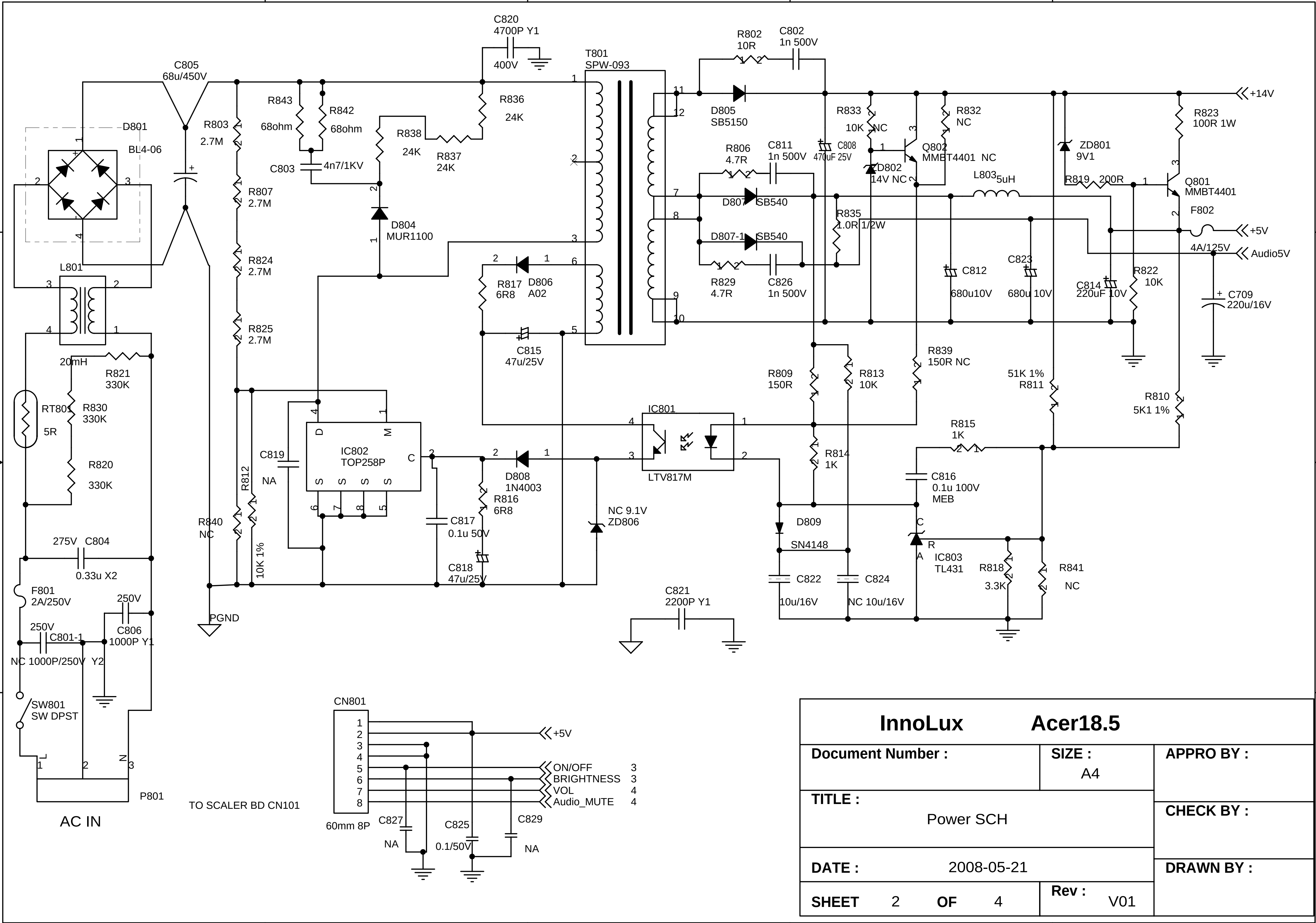


6.4 IF BD Layout

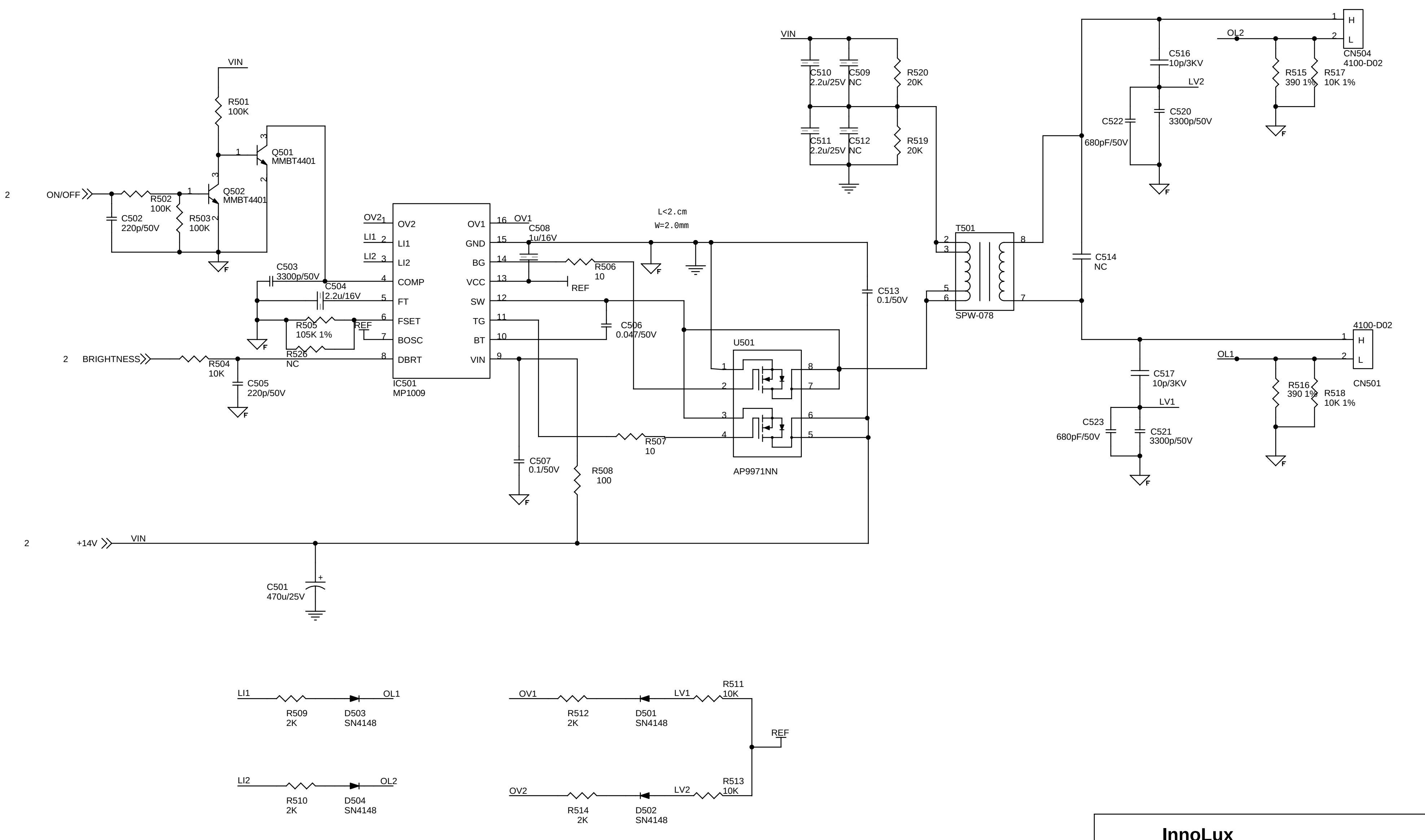
Innolux	LAYER	SILKSCREEN TOP			
	PCB NO	491721300100R	REV	A	DESIGNER: XINKE RUAN
	FILE NO	ILIF-104	REMARK	2008.07.15	



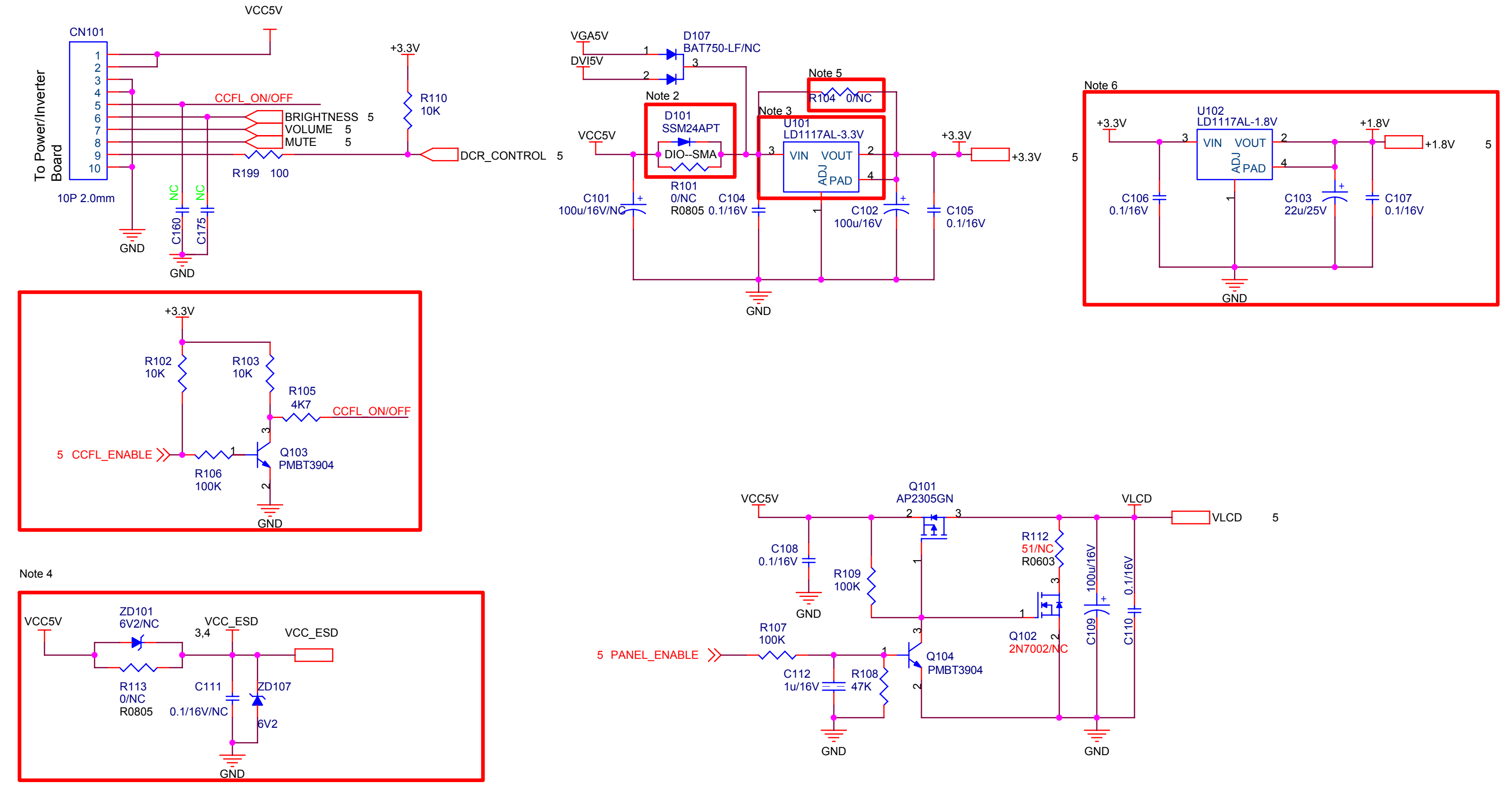
6.2 Switching Mode Power Supply circuit



InnoLux	**Acer18.5**	
Document Number :	**SIZE :** A4	**APPRO BY :**
TITLE : Power SCH		**CHECK BY :**
DATE : 2008-05-21		**DRAWN BY :**
SHEET 2 **OF** 4	**Rev :** V01	



InnoLux		
Document Number : doc	**SIZE :** A3	**APPRO BY :**
TITLE : Inverter SCH		**CHECK BY :**
DATE : 2008-05-21		**DRAWN BY :**
SHEET 3 **OF** 4	**Rev :** 01	

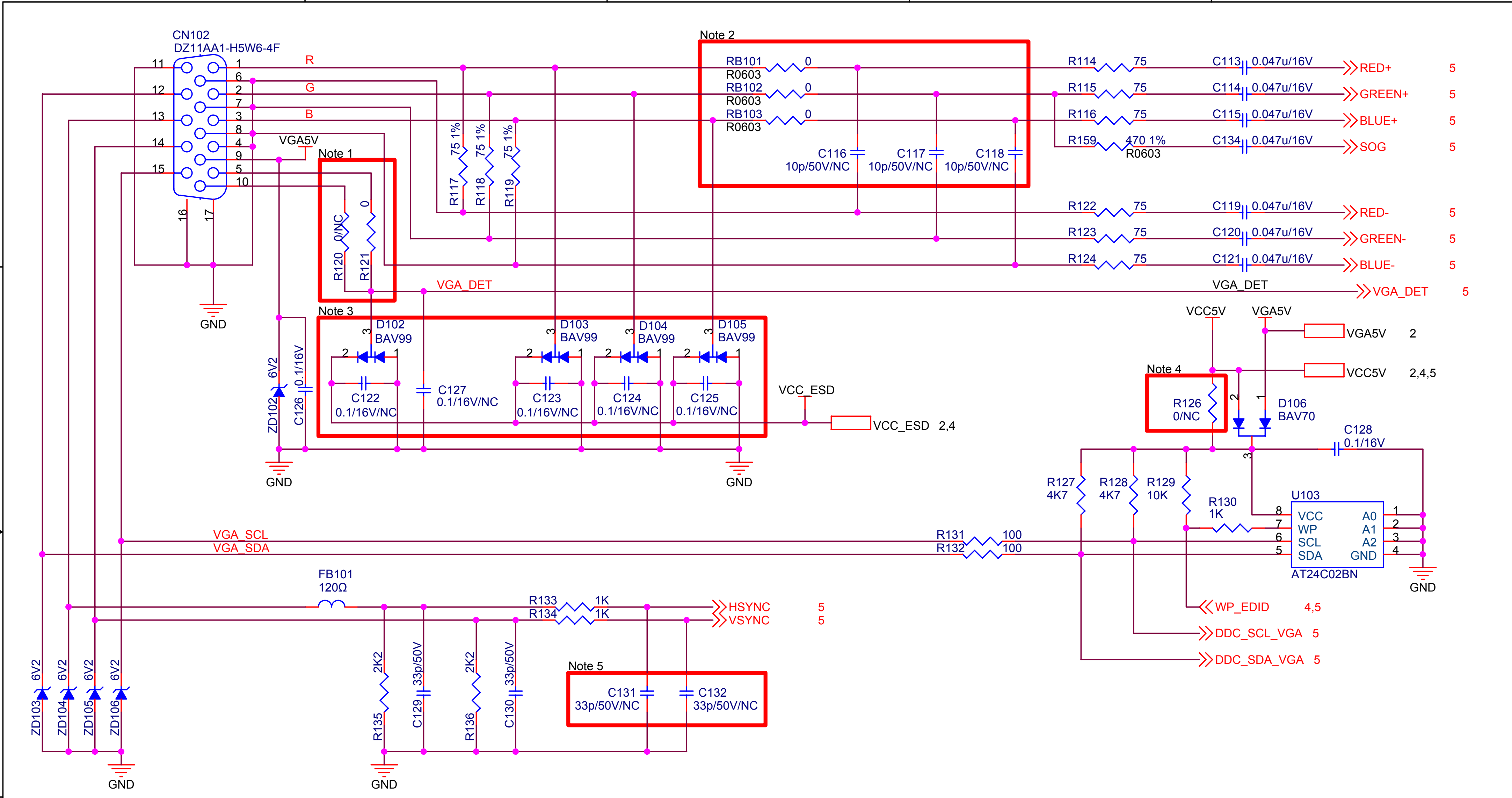


Note:

1. CN101 is no locked packgae for normal model.CN101 is locked packgae for special model(Dell).
2. D101 must be co-layed with R101
3. U101 must contain TO263, TO252 and SOT223 package
4. ZD101 must be co-layed with R113. ZD101 is used for ESD back drive.Reserved C111 for EMI issue.
5. U101 must be co-layed with R104
6. Using embedded 3.3 to 1.8 LDO NC U102 and C106 for NT68667

Anxing

InnoLux		
Document Number : NT68667 COMMON BOARD	**SIZE :** A3	**APPRO BY :**
TITLE : POWER (DC TO DC)		**CHECK BY :**
DATE : 2008-06-23		**DRAWN BY :**
SHEET 2 **OF** 5	**Rev :** V03	

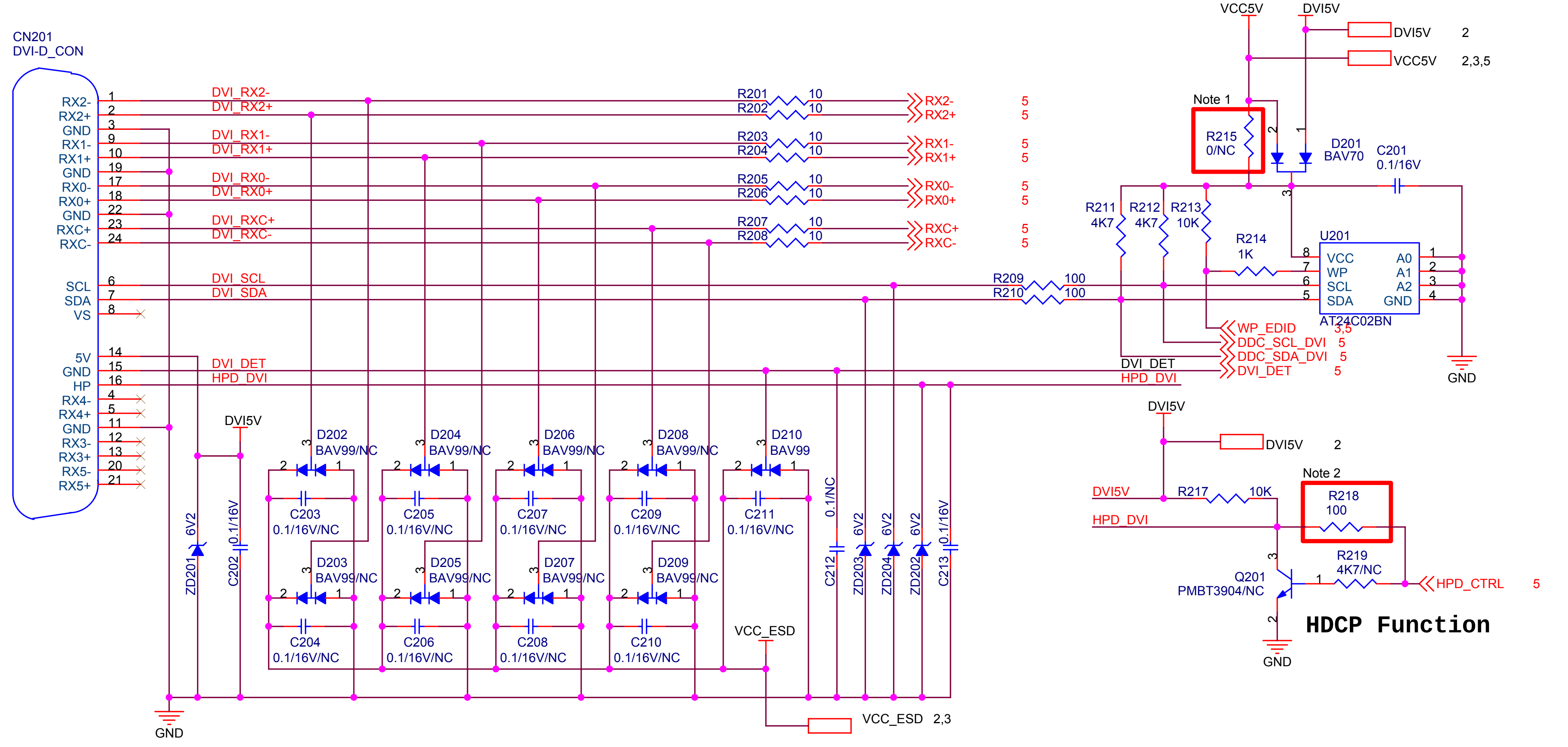


Note:

1. R120 is reserved for Samsung model.
2. R0603 package for Bead. C116,C117,C118 are reserved for EMI or performance issue.
3. C122,C123,C124,C125 are reserved for ESD or EMI issue.
4. R126 is reserved for Samsung model.
5. C131,C132 are reserved for tuning performance issue.

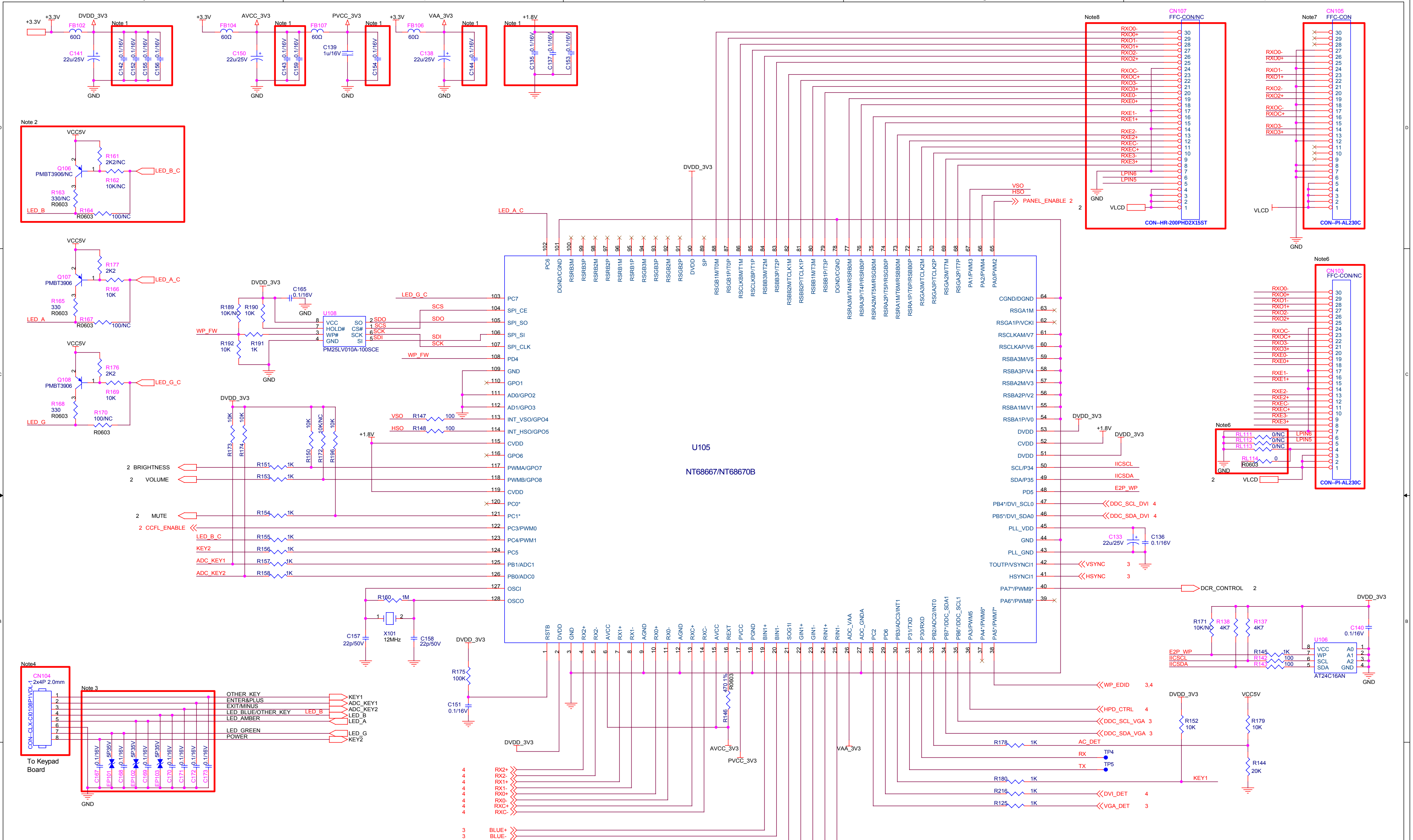
InnoLux

Document Number : NT68667 COMMON BOARD	**SIZE :** A4	**APPRO BY :**
TITLE : VGA-INPUT		**CHECK BY :**
DATE : 2008-06-23		**DRAWN BY :** Anxing
SHEET 3 **OF** 5	**Rev :** V03	



Note:
1. R215 is reserved for Samsung model.
2. R218 is reserved for some model.

InnoLux		
Document Number : NT68667 COMMON BOARD	SIZE : A4	APPRO BY :
TITLE : DVI-INPUT		CHECK BY :
DATE : 2008-06-23		DRAWN BY :
SHEET 4 OF 5	Rev : V03	Anxing

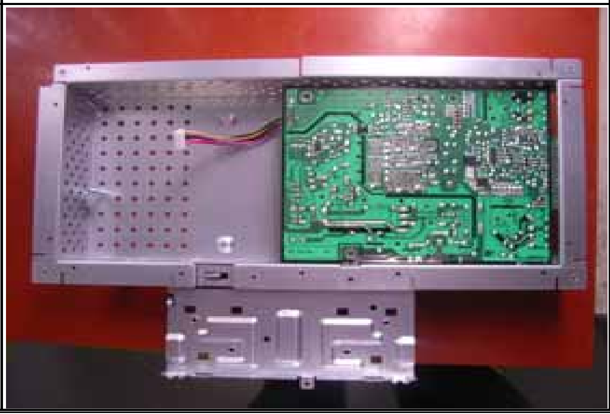


Note:

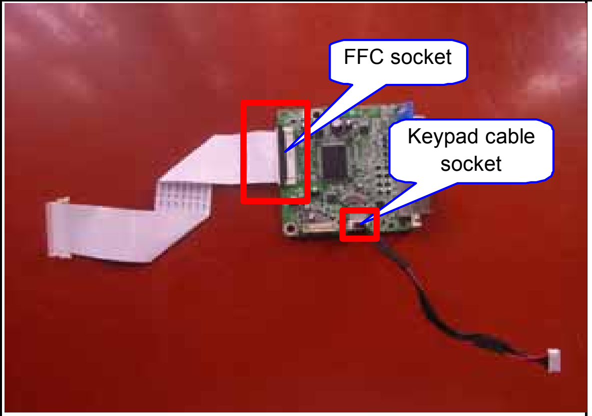
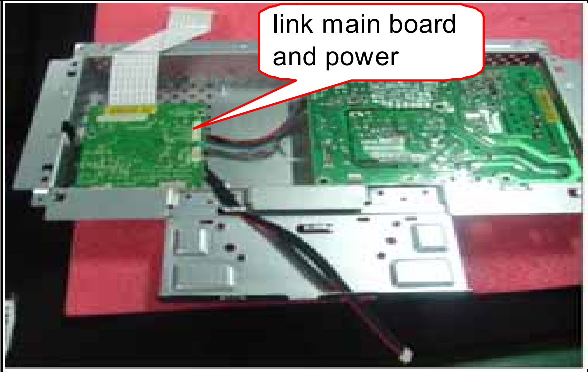
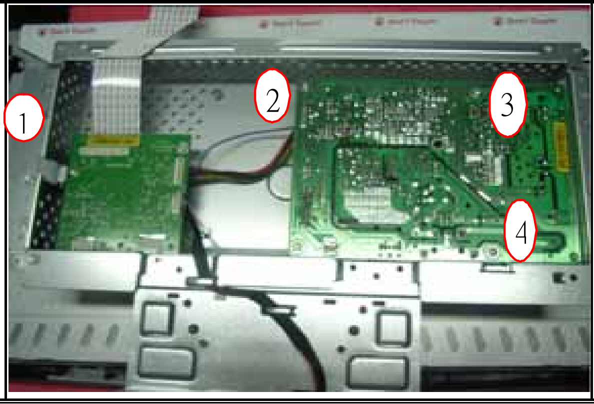
1. Each bypass capacitor (0.1u/16V) must be respectively closed to pin that is DC power input of scaler IC.
2. LED blue driving circuit is reserved for BenQ model.
3. Bypass capacitor C167,C168,C169,C170,C171,C172,C173 are for ESD and EMI issue. ESD component EP101,EP102,EP103 are for GPIO direct driving LED.
4. CN104 is no locked packgae for normal model.CN104 is locked packgae for special model(Dell).
5. RL111,RL112,RL113,RL114 are reserved for some panel spec.
6. CN103 is no locked packgae for normal model.CN103 is locked packgae for special model(Dell).
7. Connector CN105 for 15.6w&18.5w B type singe LVDS input panel
8. DIP Connector CN107 for special LVDS input panel
9. U108 can be cost down if use the 68667 which have internal flash

InnoLux		
Document Number : NT68667 COMMON BOARD	SIZE : A2	APPRO BY :
TITLE : Scaler		CHECK BY :
DATE : 2008-06-23		DRAWN BY : Anxing
SHEET 5 OF 5	Rev : V03	

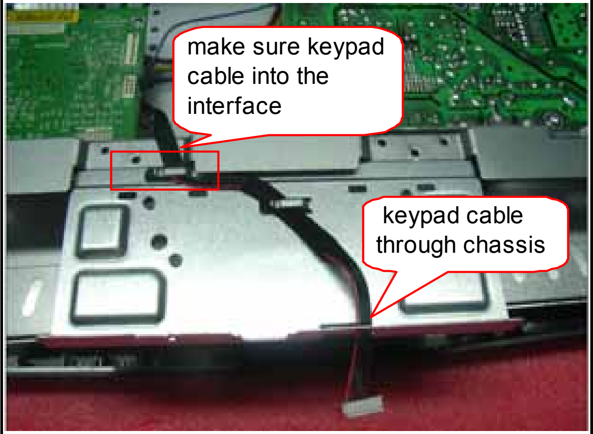
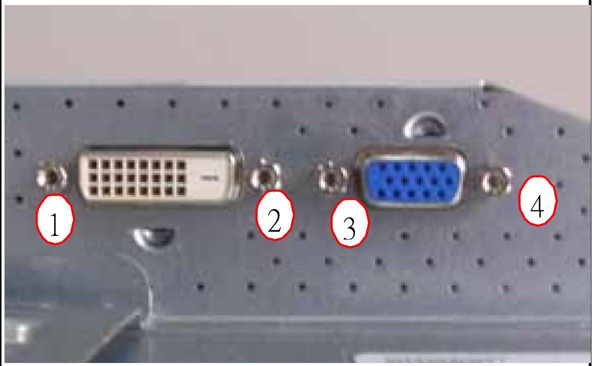
7.0 Assembly and Disassembly

Sequence	Item	Photo	Procedures	P/N	Description
S1	Place panel		(1).Take panel out of box and place it on the foam. (2).Tear open the PE bag and put it in the designated carton. (3).Place panel on the foam like the attached picture. Remark:Do not touch the lamp cord and place the surface of panel downsides on the cushion.	631102091850R	AUO V0-00 Panel
S2	Assemble front bezel		1.Reverse the panel by 180 degree using both hands,put the surface of panel downsides and make sure FFC interface is closer to operator. 2.Paste tinfoil on the position which refers to attached picture,in order to cover the gap in the panel completely. Remark:Make sure the fixed job is finished properly and lamp wire is closer to right hand;Make the tinfoil smooth in the corner of panel.	714030020501R	ASSY, BEZEL,BLACK,INL, LE18K3
S3	Place chassis		Insert powerboard into the designated location of chassis ,like the attached Picture	701000011700R	ASSY,CHASSIS,W/O SPK DVI,AUO ,LE18K3

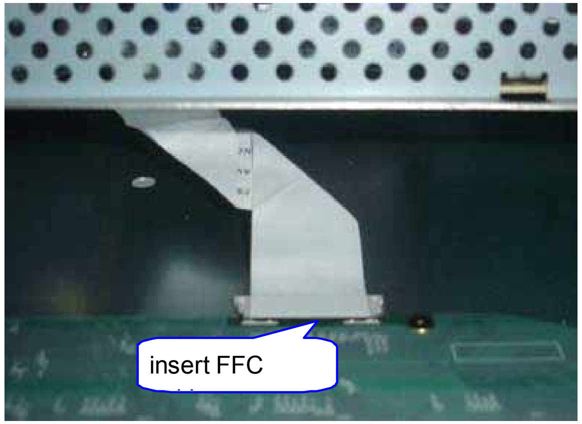
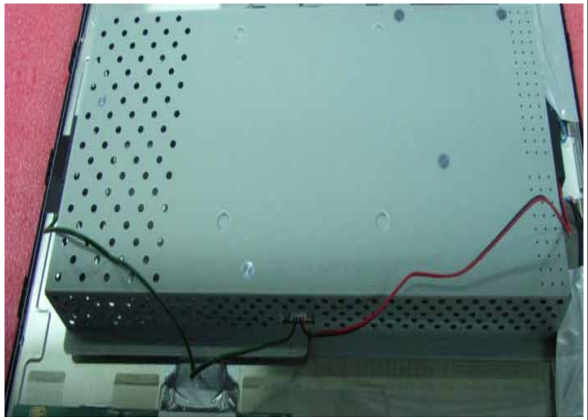
Assembly and Disassembly (continue)

S4	Insert FFC cabel into mainboard		(1).Insert FFC wire into its relevant interface of mainboard properly like attached picture1. (2).Insert the short keypad into its relevant interface like picture (2).Put the fixed mainboard in the right position.	430303001970R	HRN LVDS FFC 30P 147MM
S5	link power board and main board		1. Link power board and main board ,and make sure the cable is in the correct position 2.put the main board into the chassis and make the FFC cable is OK , as picture	791931400700R	PCBA,P/I BOARD,W/SPK,LE 18K3-712 ROHS
S6	Fix board		Fix 4pcs M3*5 screw into the power board and main board as picture	791931300702R	PCBA,I/F BOARD,W/SPK,LE 18K3-712 ROHS

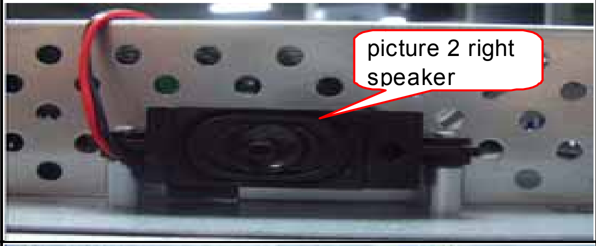
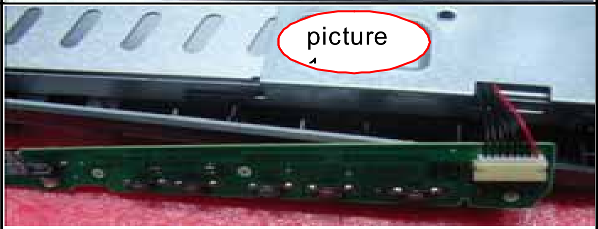
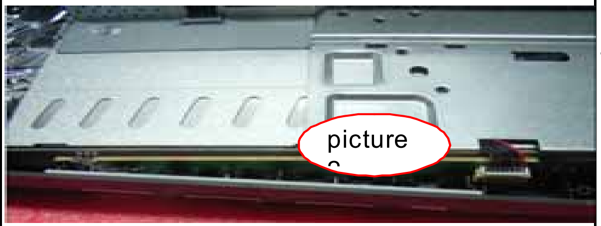
Assembly and Disassembly (continue)

S7	Pack keypad cable		Insert the keypad cable into the chassis as picture	430300802230R	HRN ASSY 2x4P to 8P 190mm UL1571#28
S8	Twist Hexagonal screws		(1). Handle hexagonal screws and electric opener (2). Twist screw in the interface like the attached Picture1. (3). Place cushion on the designated location after iron frame is taken away.		
S9	Assemble chassis		put the chassis into the position of front bezel and make sure the FFC cable is OK , as picture	701000011701R	ASSY,CHASSIS,W/O DVI,AUO ,LE18K3

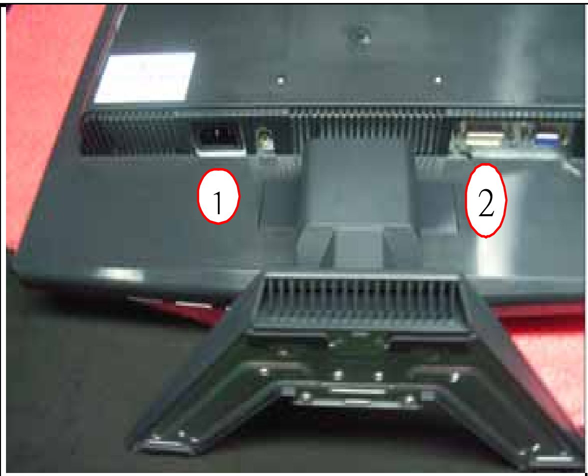
Assembly and Disassembly (continue)

S10	Insert FFC cable		Insert the FFC cable into the interface of panel as picture	430303001970R	HRN LVDS FFC 30P 147MM
S11	Insert light cable		1)Insert 4pcs light wire into the relevant position 2) put the balance light wire to the position as picture		
S12	Insert speaker cable		Insert the speaker cabler into the interface of power board as picture, make sure the red cable in right and the green cable in left	618100200360R	SPEAKER 2W 8Ω 290＆240mm R/G/B W/CASE

Assembly and Disassembly (continue)

S13	Assemble speaker	 	Put the right and left speaker into the two position of chassis , remark : put the speaker with green cable to left ,and put the speaker with red cable to right , you can find picture 1and picture 2	618100200360R	SPEAKER 2W 8Ω 290＆240mm R/G/B W/CASE
S14	Insert keypad cable	 	1) Link keypad cable and keypad as picture1 2) put the ksypad into the interface of front bezel as picture 2	790061500000R	PCBA,KEYPAD BOARD,LE1983-X10 ROHS
S15	Fix back cover		Check if back cover is fixed properly	501020225702R	BACK COVER,W/O DVI SPK ,BLACK,LE18K3-AU

Assembly and Disassembly (continue)

S17	Assemble cover hinge		Put the right and left cover hinge into the related position as picture	501020225700R	COVER HINGE,BLACK RIGHT,LE18K3
S18	Packing		(1)Release monitor to the packing line (2)Put monitor into carton like the attached picture		